

Medical Lib
MAR 22 1924

Vol. VII

MARCH, 1924

No. 3

AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY

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PUBLISHED BY C. V. MOSBY COMPANY, 508 NORTH GRAND BLVD., ST. LOUIS, U. S. A.

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The American Journal of Obstetrics and Gynecology

VOL. VII

ST. LOUIS, MARCH, 1924

No. 3

Original Communications

A CHEMICAL STUDY OF THE INORGANIC CONSTITUENTS OF BLOOD IN NORMAL AND ABNORMAL PREGNANCY

BY W. DENIS, PH.D., AND E. L. KING, M.D., NEW ORLEANS, LA.

*(From the Laboratory of Physiological Chemistry and the Department of Obstetrics
of the School of Medicine, Tulane University)*

DURING the past decade a number of chemical studies have been made of the blood of eclampsia patients and of normal pregnant women. Almost all of this work has been confined to investigations dealing with the distribution of the nonprotein nitrogen bodies, and to observations of the alkaline reserve and hydrogen-ion concentration. As this phase of the subject has been discussed in considerable detail in the recent publications of Killian and Sherwin¹ and of Caldwell and Lyle² we can refer to these papers both for excellent summaries of our present knowledge of the subject and for bibliographies of the same.

So far, although several authors have, on theoretical grounds, called attention to the possible significance of the subject, but little work has been done on the inorganic constituents of the blood either in normal or abnormal pregnancies; in fact the recent paper of Krebs and Briggs³ probably constitutes the only publication in which complete analyses of the inorganic constituents of the blood of pregnant women are given.

The figures presented in Tables I and II represent the result of a series of observations made during the summer and autumn of 1921 on the blood of patients in the obstetric service of the New Orleans Charity Hospital. Although our object was primarily to study the inorganic constituents of the blood in eclamptic cases, we found it

NOTE: The Editor accepts no responsibility for the views and statements of authors as published in their "Original Communications."

necessary, in view of the absence of available data to examine also a series of specimens taken from normal women in late pregnancy.

Our samples of blood were taken, as a rule, in the forenoon about three hours after breakfast, although a few were obtained in the afternoon several hours after the noon meal. Unless otherwise specified serum was used for all determinations.

The analytical technic employed was as follows: for sodium and potassium the methods of Kramer and Tisdall were used,⁴ calcium in a few of the earlier observations was determined by the method of Lyman⁵ and in all other samples by the technic recommended by Kramer and Howland,⁶ and magnesium by the procedure of Denis.⁷ For the acid radicles the following methods were employed; chlorides by the procedure of Smith,⁸ phosphates by the Bell-Doisy method,⁹ and sulphates by the procedure of Denis.¹⁰

In many cases observations were made on the alkaline reserve of the plasma as determined with the Van Slyke apparatus,¹¹ and for purposes of comparison we have also included observations on the nonprotein nitrogen and creatinine of the blood, both of which were determined by the procedure of Folin and Wu.¹²

In Table I we have collected the results obtained on the sera of eighteen normal pregnant women, all of whom were delivered within a few weeks after the blood sample was taken, and in Table II are presented the results of the examination of the blood and sera of twelve cases representing various types of toxemias.

TABLE I
INORGANIC CONSTITUENTS OF THE SERUM IN NORMAL AND PREGNANT WOMEN

CASE NO.	CO ₂ VOL %	MG. PER 100 C.C.								
		WHOLE BLOOD		SERUM						
		NON-PROTEIN NITROGEN	CREATININE	INORGANIC PO ₄ AS P	Cl	SO ₄ AS S	Na	K	Ca	Mg
3		25	1.3		354	0.5	325	19.5	11.0	2.3
4	49.5	20	1.4	4.5	345	0.6	332	19.0	10.8	2.2
6	41.0	21	1.2		327	0.5		19.0	10.0	2.5
7		30	1.4	3.1	355	0.4		19.0	10.1	2.5
8	42.0	21	1.3	3.0	340	0.6	355	19.0	9.0	2.6
10		23	1.1	3.3	349		320	22.0	9.2	2.4
11		25.5	1.2	3.0	332		340	19.2	9.5	2.3
13		25.0	1.0	3.3	345		330	21.5	9.7	2.7
15	56	21.5	1.3	3.0	342	0.6	336	19.0	9.4	3.0
16	60	30.0	1.3	3.1	366	0.4	347	19.4	10.4	2.6
17	53	30.0	1.5	3.0	340	0.3	343	21.0	9.1	2.6
19		39.0	1.1	3.6	345	0.4	344	18.4	11.0	2.4
20		35.0	1.2	2.9	340		348	19.5	11.0	2.3
21		27	1.3	3.0	340		362	19.4	10.0	2.5
23		32	1.2	3.0	346		320	20.0	10.0	2.6
26		32	1.3	2.8	336		340	20.0	9.4	2.7
27	58	30	1.1	3.3	345	0.5	335	22.0	9.4	2.6
28	54	30	1.1	2.9	340	0.5	345	23.0	9.6	2.5

Histories of the patients whose blood analyses are given in Table I.

- Case 3.—Blood taken 6/27/21, delivery 8/30/21. Age 17 years, pregnancies 1.
 Case 4.—Blood taken 7/1/21, delivery 8/30/21. Age 21 years, pregnancies 1.
 Case 6.—Blood taken 7/13/21, delivered 8/23/21. Age 31 years, 2nd pregnancy.
 Case 7.—Blood taken 7/14/21, delivered 7/20/21. Age 21 years, 2nd pregnancy.
 Case 8.—Blood taken 7/14/21, delivered 8/6/21. Age 28 years, 2nd pregnancy.
 Case 10.—Blood taken 7/14/21, delivered 7/25/21. Age 36 years, 7th pregnancy.
 Case 11.—Blood taken 7/14/21, delivered 7/24/21. Age 23 years, 1st pregnancy.
 Case 13.—Blood taken 7/20/21, delivered 7/24/21. Age 26 years, 2nd pregnancy.
 Case 15.—Blood taken 7/20/21. Left hospital before delivery.
 Case 16.—Blood taken 7/20/21, delivered 7/31/21. Age 34 years, 7th pregnancy.
 Case 17.—Blood taken 8/12/21, delivered 8/14/21. Age 31 years, 2nd pregnancy.
 Case 19.—Blood taken 8/12/21, delivered 8/21/21. Age 29 years, 5th pregnancy.
 Case 20.—Blood taken 8/12/21, delivered 8/18/21. Age 24 years, 1st pregnancy.
 Case 21.—Blood taken 8/12/21, delivered 8/14/21. Age 26 years, 2nd pregnancy.
 Case 25.—Blood taken 8/28/21, delivered 9/4/21. Age 27 years, 6th pregnancy.
 Case 26.—Blood taken 8/28/21, delivered 10/11/21. Age 24 years, 4th pregnancy.
 Case 27.—Blood taken 8/12/21, delivered 8/14/21. Age 31 years, 2nd pregnancy.
 Case 28.—Blood taken 8/12/21, delivered 8/21/21. Age 25 years, 3rd pregnancy.

TABLE II

INORGANIC CONSTITUENTS OF THE SERUM IN ECLAMPSIA AND PREECLAMPTIC TOXEMIA

CASE NO.	CO ₂ VOL %	MG. PER 100 C.C.									
		WHOLE BLOOD		SERUM							
		NON-PRO-TEIN NITRO-GEN	CREATININE	INOR-GANIC PO ₄ AS P	Cl	SO ₄ AS S	Na	K	Ca	Mg	DATE
5	24	25	2.8	3.4	385	0.5	343	19.6	9.5	2.61	7/ 9/21
24	41.2	33	1.7	3.5	360	0.5	349	23.0	9.6	2.60	8/18/21
24		28	1.2	3.4	340	0.5	350	20.0	10.5	2.54	8/26/21
24	52.0	25	1.2	3.8	375	0.6	346	22.0	9.6	2.3	8/30/21
30		32	1.3	4.1	330	0.5	375		9.5	2.5	8/26/21
39	32	24	1.2	2.0	381		322	19.0	9.0	2.44	10/23/21
39	24	39	1.2	2.0	378		330	20.0	10.0	2.39	11/ 3/21
42	60	33	1.3	2.1	375	0.48	370	21.2	10.2	2.50	11/ 9/21
42	59	39	1.1	3.2	378	0.50	330	23.0	9.0	2.55	11/29/21
43		100	1.5		366	3.2	325	22.0	10.1	2.6	12/16/21
45		30	1.1	3.0	372		330	21.9	9.6	2.6	11/29/21
46	39	60	2.1	2.2	374		336	23.0	9.8	2.5	11/29/21
56	38	62	2.0	3.2	340	0.5		22.1	10.0		2/ 9/22
49		75	1.3	2.5	384	0.91	310	20.2	10.2	2.39	2/16/21
53		32	1.2						9.9		2/ 2/22
54		28	1.1	2.4	335	0.5	292	22.0	10.1	2.55	2/ 2/22

Histories of the patients whose blood analyses are given in Table II.

Case 5.—A multipara, had been under treatment for about one month for hypertension and albuminuria. Entered hospital in coma and died, after several convulsions, 12 hours after admission. Blood sample was taken while in coma.

Case 24.—A primipara, admitted in labor, had 3 convulsions 9 to 10 hours after delivery. Recorded and left hospital with urine still showing albumin and casts.

Case 30.—A multipara, under observation for 4 to 5 months on account of slight edema, hypertension and albuminuria. Normal delivery, no convulsions.

Case 39.—A primipara, age twenty-one years, at term, edema for one week with some toxic symptoms, labor induced, baby stillborn; 1 convulsion 18 hours after delivery. Recovery with albuminuria persisting until discharge.

Case 42.—Multipara, under observation for hypertension and albuminuria. Labor induced, recovery.

Case 43.—Multipara, 7 months pregnant, admitted in coma, four convulsions before and one convulsion after the delivery of a stillborn child.

Case 45.—Multipara, hypertension and some toxic symptoms albuminuria, normal delivery of a living child.

Case 56.—Primipara, 10 convulsions, baby stillborn. Mother died shortly after delivery.

Case 49.—Multipara, patient admitted in coma, had several convulsions, induced labor caused birth of macerated child. After delivery convulsions continued followed by coma and death.

Case 53.—Primipara, general edema, albuminuria but with no toxic symptoms, normal delivery of living child.

Case 54.—Multipara, edema, albuminuria, vomiting and headache. Induced labor caused delivery of stillborn child.

In considering the results presented in Tables I and II it is first desirable to decide on what may be considered the normal concentration of the inorganic constituents of human blood. A summary of the literature on this subject has recently been published by Denis and Hobson¹³ and a repetition is, therefore, unnecessary in this paper. On the whole, as far as can be determined by the data now available, the following figures may be taken to represent average values for the inorganic constituents of normal adult serum expressed as milligrams per 100 c.c.

Na	K	Ca	Mg	Cl	PO ₄ AS P	SO ₄ AS S
339	20.5	10	2.4	360	3.	0.5

An examination of the results on both the normal and abnormal cases indicates, on the whole, the same remarkable constancy of the concentration of the inorganic constituents as has been previously shown to exist for normal subjects.

In Table II a distinct increase is noted in the sulphate content of the sera of Cases 43 and 49, an increase which is coincident with a retention of nitrogenous bodies as shown by the high values obtained for the nonprotein nitrogen fraction, and which is analogous to the retention of sulphates observed by Denis and Hobson¹³ to occur in certain cases of nephritis.

The suggestion has frequently been made that in pregnancy, particularly in the later months of this condition there often, or according to some authors invariably, occurs marked abnormalities in calcium metabolism. Within the past few years, since the perfection of reliable micro methods for the determination of blood calcium, several investigations have been made to determine whether, as has frequently

been stated by the older writers on the subject, there is to be found in this condition a lowering of the level of the calcium content of the blood.

On the whole, the results so far published may be considered to give somewhat contradictory results. Kehrer¹⁴ finds that the calcium content of whole blood falls during the latter half of pregnancy; De Wesselow¹⁵ reports that serum calcium is frequently, but not invariably, low during the later months of pregnancy, and essentially the same conclusion is reached by Krebs and Briggs,³ and by Bogert and Plass.¹⁶ Widdows¹⁷ finds that in most (but not all) cases there is a tendency to a decrease in the calcium content in the blood in late pregnancy and a general tendency to rise directly after confinement, but reaches this conclusion by analyses of the blood of the same individuals at definite periods during pregnancy, as her results indicate that a wide range of values may be obtained from different cases taken at any specified month.

TABLE III
CALCIUM IN THE SERUM OF NORMAL PREGNANT WOMEN

CASE NO.	AGE YEARS	GRAVIDA	GESTATION MONTH	CA- MG. PER 100 C.C. SERUM	CASE NO.	AGE YEARS	GRAVIDA	GESTATION MONTH	CA- MG. PER 100 C.C. SERUM
36	20	II	2.0	11.2	55	22	I	7.5	11.0
49	18	I	2.0	10.6	46	16	I	7.5	11.4
62	18	I	2.0	10.2	33	17	I	7.5	10.8
42	22	II	3.0	11.4	11	19	I	8.0	11.2
40	31	IV	4.0	11.0	12	37	VIII	8.0	11.6
63	18	I	4.0	10.4	13	17	I	8.0	11.2
1	25	I	4.0	11.9	16	24	I	8.0	11.2
3	21	I	4.0	11.7	22	30	VI	8.0	10.6
5	17	I	4.0	10.6	25	20	I	8.0	11.2
23	30	III	5.0	11.0	27	21	IV	8.0	11.6
26	18	I	5.0	11.2	28	18	I	8.0	10.8
2	27	III	6.0	11.1	32	25	V	8.0	10.6
4	24	II	6.0	11.0	38	21	I	8.0	10.6
7	25	VI	6.0	11.4	39	18	I	8.0	10.8
9	22	III	6.0	11.0	43	15	I	8.0	10.6
51	19	II	6.0	10.2	45	24	III	8.0	11.2
60	18	II	6.0	10.2	52	21	II	8.0	10.4
29	22	I	6.0	11.0	54	21	II	8.0	11.0
6	18	I	7.0	10.6	58	22	II	8.0	10.6
16	19	I	7.0	11.2	59	20	I	8.0	10.4
17	22	I	7.0	10.8	64	31	VIII	8.0	10.6
19	17	I	7.0	11.2	47	18	I	8.5	11.7
20	37	IX	7.0	10.4	8	37	VI	9.0	11.2
24	23	I	7.0	10.8	14	21	I	9.0	10.8
31	38	II	7.0	10.4	15	22	II	9.0	11.6
35	18	I	7.0	10.2	18	23	IV	9.0	11.2
41	17	I	7.0	10.4	21	18	II	9.0	10.6
49	23	IV	7.0	10.8	30	23	III	9.0	10.8
48	20	II	7.0	10.4	34	25	II	9.0	10.4
53	35	VIII	7.0	10.4	37	21	I	9.0	10.8
56	19	I	7.0	10.8	50	27	III	9.0	11.2
61	19	I	7.0	10.4	57	17	I	9.0	10.6

On the other hand Jansen¹⁸ finds the calcium content of the blood little altered by pregnancy, whereas Lamars¹⁹ believes that the calcium content of the blood of pregnant women is higher than in the non-pregnant, and Meigs, Blatherwick and Cary²⁰ found no significant lowering of the calcium in the whole blood or serum of pregnant cows.

In Table III are presented the results of the examination of the sera of 64 women in practically all stages of pregnancy, all of whom may be classed as strictly normal subjects.

If we accept the values of 9 to 11 milligrams per 100 c.c. as representing the standards for normal serum calcium, a study of the results presented in Tables I and III leads to an agreement with the conclusions of those earlier investigators, who believe that no significant changes occur in the serum calcium of pregnant women, or at least no change which can be demonstrated by the methods of attack used here; whether it would have been possible to have demonstrated a progressive lowering of the serum calcium in individual cases, had we been able to obtain specimens of blood from the same subjects at different times during pregnancy, as was done in the investigations of Widdows, can only be shown by further work on the subject.

Our results on serum calcium in cases of toxemia as given in Table II are interesting in view of the various speculations which have been published regarding the supposed relation of a lowered blood calcium and the convulsions of eclampsia, for while in a number of these cases convulsions occurred, in no instance was it possible to demonstrate any lowering of the calcium content of the serum or any abnormal ratio in the concentration of the various inorganic constituents of this fluid.

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THE COLLEGE—THE HOSPITAL—THE MEDICAL STUDENT*

By G. K. DICKINSON, M.D., F.A.C.S., JERSEY CITY, N. J.

HE is honored of men who, by his peers, is raised to a place of prominence. To be selected by the Fellows of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons as their president carries the greatest honor that can come to any one in our profession, and humbly do I fill the position thus given me.

But all honors involve an obligation. To be president of this organization means much more than a chairmanship. It means going down into the cockles of the heart, where the blood is warm, and searching for some truth, for some idealism to present, hoping it may stimulate in the minds of those who listen an activity which will bear fruit.

"I have gone many ways in the wanderings of thought," and feel that nothing is more pleasing or more important than some thoughts on "The Lad." The making of a medical mind will be swerved according to mentality, which is largely ordained by the Fates, for the blood of ancestry fixes character. When the young man launches towards his life work he lacks experience; that comes many years later. He is directed by unconscious motives. Associations and friendships give him some inkling of the germ that is within him, and, without logic, without concrete thought, he endeavors to make a proper decision.

Having an imperfect vision of the future, obsessed largely by his schooling, confident in himself, affected by the urge of his endocrines, youth goes ahead, trusting that those whom he may meet in the schools of training will be honest, fair and helpful, little realizing how much the personal equation of the professor, the bias of the times and the shortsighted laws of governing bodies may affect his entire life.

The intellectual type will find no person for his stimulation and special growth. Genius has no friends. Capable persons are never liked. The mediocre will be allowed to plod, guided at times and hindered at others. Perhaps this picture can be best visualized by some personalities.

It seems now as if the college we attended was instituted not so much for training the young man to be a doctor, as to add to the income of the professors and give them prestige in the community. A red ticket was purchased for a certain privilege, anatomy, and

*President's address presented at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

we were taught and did dissections without a viewpoint of practical application. We knew Gray and the cadaver, but not the reason.

Surgery was an exhibition of skill and rapidity, not of diagnosis and careful thought. We were expected to applaud and yet not get the touch. Pathology was almost unknown, but morbid anatomy was passed around on a platter to be fingered, and the contaminated finger put into the pocket where previous contaminations had gone.

Gynecology was the mucous plug of the cervix and the stick of nitrate of silver. Obstetrics was taught by absent treatment, for we never saw a child born. And so through the gamut we would sit on benches and hear talks, see little, and have examinations. It was possible, in a year, for the greenest man to obtain a degree, and when we consider that the boy whose father found a failure in life, could be thrust into medicine and made a doctor, one can comprehend the type of physician of the day.

Further proof is that after leaving college we joined our medical societies where little that was scientific or clinical was brought up, but where most of the time was spent in dissensions and idle talks.

But in all this there was a ray of light. Two things, both important in professional contact, were not suppressed in the human nature of the young man, for the mysteries and faith had not been stunted nor killed—faith in drugs as we nowadays have faith in aids, forgetting as Paré said, "The physician treats, but God cures."

This chaotic and almost criminal method of making doctors after the gristmill fashion of grinding up anything that comes along and calling it success, could not continue indefinitely, and in 1910 the voice of Jeremiah was heard, when Flexner issued his report—a scathing denunciation, yet truthful statement, of educational conditions in the United States and Canada. He found nearly two hundred colleges, very few of them giving an education leading up to proper thought and meditation, or one providing mental food to nourish and stimulate the higher centers. In the great majority the student was being rushed through and tinselled as he was in our time.

The young with good preliminary training, an inherited poise and love for the truth and an irresistible desire to investigate for himself and to know rather than to accept, would come out of any institution a credit. The history of the past in the profession is the history of just such men only. The old story of Mark Hopkins on one end of the log and the student on the other has been proved many times.

Youth is imperious and positive; sees his own way, not comprehending that of others; unconsciously he fits in with a symbol. We perceive four main types as illustrated in his ambition. Aurelius said,

"The value of a man is the value of the objects on which his heart is set."

Mayhap he desires a general field, to go to the bedside and home, there to practice the art and make a humble living. In this he is following the footsteps of Pythagoras, the earliest family physician.

Others with a conceit of their worth, without thought of their limitations, foresee their placement in hospital work. "They are going to be surgeons." They are restless of the older men who have earned the right. They do not comprehend the importance of large experience, and from the start would be Aesculapians.

A few, with warmer hearts and sympathy towards mankind, not thinking of gold, but more of social service and actuated by the spirit of brotherhood, take Saint Luke as their model.

Still fewer, minds of high mentality, men who follow the precepts of John Hunter, "do not think, but try." Those who are our students and research workers, imbued with high idealism, yet often poor in script, the ones whose names resound through the ages, are inspired by the heights of Apollo.

To some these remarks may seem irrelevant and fanciful, but by us the *guiding spirit of the young man* should be kept ever in mind and symbolized. "The true physician is one having the human body as a subject, not a mere money-maker."

These four types of mentality have been the grist of the college mill in the past and will be in the future. Flexner so pictured conditions that the general profession as well as the collegians were compelled to bring about a readjustment. The usual thing happened. The colleges which were honest in their motives, rapidly came into line. Those that were administered by men of commercial tendencies did much wobbling, but now we have the majority of colleges, taking the young men, crude, with diverse mentalities and ambitions, but with a stated preliminary education, using a popular term, and endeavoring to make doctors of them.

But several matters have developed in the interim and a number of viewpoints have been exploited. Never has there been so much public interest taken in education as at present, evidenced by numerous articles appearing in the different journals and lay press, and the papers read in our society meetings. It is very apparent that the present methods are not satisfactory. Yet we are accepting the product termed an *education* as a criterion, neglecting intelligence and cleverness of mind. Where are our applied psychologists?

It seems impossible to take the mind from the material. When Moses went up into the Mount for inspiration, he came back to find the people worshipping the golden calf. Every time we make an advance toward our ideals we discover only too large a number striv-

ing for the gold. This is an age of business and business principles. Largely unconscious to those now living, the trend is to develop the business aspects of the professions. The nursing profession is an evidence of this, as well as our own.

Flexner reduced the number of colleges, raised their "standards," diminished the number of students, but made it more difficult for the poor man's son with intelligence and love for the calling to enter and become a physician. The internes tell us that medicine is the most expensive profession to enter. Hospitals that not so many years ago obtained internes without offering them a bonus, now are compelled to give a fairly substantial one. Many of the lads before they finish internship have invested their parents' last penny in their education, and are obliged to obtain a salaried position before starting out in general practice and become self-supporting.

As a consequence, the prophecy made a dozen years ago seems to be coming true, that though we have fewer and better colleges and the minds of the young man more broadly learned, there is an empty space in life which is being filled by the pathies, being an evidence of how we fall to magic and the mysteries.

It seems to be forgotten that "a physician is one who satisfies the longings and yearnings of the body and soul, as well as one who understands disease and its treatment." Are we nowadays making physicians? Is not Plato correct, and should we not ever keep in mind his noble definition?

Much in medicine tends to negative education, for instance, the x-ray. Nothing catches the ordinary mind so firmly as that which appeals to the eye, for the average man dislikes to think and is soon fatigued by thinking. Has it not become a habit for the public to ask for an x-ray? Has it not become the path of least resistance for the physician to request them and accept the opinion as given of the shadow for a diagnosis? A recent work makes the statement that "without the aid of the x-ray, diagnosis is not possible for the careless, inexperienced and incompetent," and, again, "the laboratory is the scientific gold brick."

Not for a moment do we deery the immense value of the x-rays and laboratory helps, but what we must develop in the young student is judgment and sense of proportion, and that can be done only at the bedside. The true physician should have the intelligence and conscience to get away from this encumbrance.

Franklin Martin conceived a great thought in his endeavor to raise the status of the hospital. He gives his life, time and the best that is in him for this purpose. The movement was so needed and his work so thorough, that many hospitals have been greatly benefited. The lack of knowledge of what a hospital should be has been followed by

a better understanding, because at every meeting he is telling the story over and over again. It may be tiresome to the profession, but it is valuable to the public. But hospitals are as human beings; the innovation does not last. Idealism is tiring and hospitals begin to slide back. The patient is studied less and the laboratory more.

Medicine has grown so rapidly that unconsciously it became necessary to develop many specialties. No one man has the brain or the length of life to cover all the branches with their rapid accumulation of data, but the more specialties grew, the more evident was it that each interlocked. Biologically or physiologically speaking there are no specialties. The body acts as a unit, connection by both spinal and sympathetic nerves, and general interaction through the endocrines leads to a harmony of body action.

The obstetrician, the gynecologist, or the surgeon, to be successful in his care must be a good diagnostician and therapist of every organ in the body. He must know pathology and physiology in the broad sense. No matter what our specialties are we cannot escape the responsibility of broad general knowledge. To specialize narrows the mental horizon and limits meditation, so that except for technic, whether it be pill, powder or lancet, we should know all things.

What are our colleges doing today? In my opinion they are making one great mistake. They are putting the law on the young man. They are dictating what instruction he shall have before he will be accepted as a student in medicine. A lad with money may manage to go through college and the requisite number of years of hospital training, but the bright man with intelligence may be barred because his parents could not afford the game.

The stars that shine the brightest in the history of the past were the poor men, the self-made. We could name many who have made medicine what it is, but whom the law today would not allow to study. It is said that if the Lord came back to earth He could not find a church which would accept Him. This regulation seemingly cuts out the most desirable.

Another misfortune is the long deferred entrance into active practice. So much time is spent as a student in the colleges and in hospitals that a young man cannot become self-supporting until into the thirties. This is the time of life when his brain and body are most active and pliable. It is now that he shows his individuality. Big thoughts and high ambitions stir his soul. It is at this period that the body yearns for matrimony and home life. To be handicapped by long suppression of normal instincts but subverts the future.

The spirit of America is opening the door in a most democratic way to the clever, which means, to those who have minds and are willing to use them. Intelligence and determination are the criteria.

Aristocracy worships capital and that which is its corollary, social position, but progress comes through the man who in his shirt sleeves reaches up from the bottom, who has to strive to succeed and through striving trains his mind. To suppress efficient mentality by putting a tax on the beginner will eventually not only obscure many a shining light, but weaken the profession as a whole.

It seems as if some of the specialties might be postponed to a post-graduate period. Valuable as general knowledge may be, it cannot be acquired in the ordinary time devoted to college instruction. Then much of it is too material. Give one a start on a few things and he will do the rest by the bedside and in his study. Should we not substitute for some a lucid stimulating course on the lives of leading minds and those who have made medicine what it is, associated with the philosophy of medicine and applied ethics? Nothing makes for culture more than the knowledge of our forebears, their times, what they did, how they succeeded, and the difficulties besetting their paths.

Naturally, each thinker feels his branch is the most important. Four years of study, and during these four years is anything made of the humanities? Are we trying to make doctors or mechanicians? Are we trying to make healers of the soul and body, or are we simply giving instruction?

We find from the many internes we have met and talked with that that which their professors have told them is final. Any different opinion is heresy. These men have not been taught to think. They have not been made to understand that truth is but a fragment, that during their whole life they must be searching for it, and will only find it piece by piece. They are sowing weeds as well as fruitful seeds, and when college is finished and practice begun, they will discover that they must forget much they were taught and learn medicine all over again at the bedside. This is what we call "weeding the garden," for, as Sydenham says, "True practice consists in observations of Nature."

Ten or more years ago I wrote to the deans of the New York colleges, asking for a conference in order that a notion of mine might be discussed. Dean Brown replied, and, after a delightful dinner, over our cigars I talked with him of the plan that no man leaving college should obtain his diploma until he had served a specified time in some hospital, that the college should select among the hospitals of the community those with which it can work, and stated the proposition thus:

"We will provide you with internes, you need not worry about this matter in the future. Two score cards will be sent out, one for the hospital authorities and one for the interne. The hospital author-

ities shall report whether the interne proves acceptable on different points—industry, kindness, promptness, carefulness in making histories and physical examinations, presenting a proper personal appearance, etc. The interne shall report whether the doctors individually are giving proper instruction and whether the medical, surgical, or other departments are teaching him as they should. He is to report defects in his bedside instruction. He is there as a student, not as a servant or high-class orderly. If the dean of the college finds that the instruction is poor, word will go to the board of managers, that Dr. So-and-So is falling behind in fulfilling an obligation. If this incompetence continues, the hospital's attention will be called to the neglect, and perhaps that particular attendant may be asked to resign. If, on the other hand, complaints are made of the lad, he will be 'jogged' up. Should he fail to improve, he will be removed and receive no diploma."

In this way, instruction at the bedside will be obtained for the student interne. He will learn medicine, he will learn the personal touch, he will learn that each patient has a soul, home-ties and friends, as well as an illness, and he will be made a teacher of men.

The hospitals will be elevated, even more materially than by Franklin Martin's method. This will be a slow process. There are too few hospitals that have a teaching staff, but if the plan be started and broadly utilized, it will not be many years before we will have better hospitals, better professors, and will be making doctors of "high-erected thoughts situated in a heart of courtesy."

280 MONTGOMERY STREET.

SUMMARY OF THE ANSWERS TO THE QUESTIONNAIRE
SUBMITTED TO THE MEMBERS OF THE NEW YORK
OBSTETRICAL SOCIETY ON THE "REGULA-
TION OF CONCEPTION"*

LAST year the council of the New York Obstetrical Society determined to include the birth control problem as a part of the program on the evening devoted to questions of sociologic interest. A paper was presented on the subject by Dr. Geo. W. Kosmak in March, 1923, and as a result of the discussion a committee was appointed to canvass the members as to their attitude in regard to the regulation of conception. This committee went over the subject carefully and adopted a series of twenty-two questions calculated to ascertain the attitude of the individual members. Fifty-seven answered the questionnaire and a majority signed their replies. Many failed to answer every question and therefore there could be found no common basis for percentage figures.

The questions and a summary of the answers follow:

- Q. I: In response to the general desire for an expression of opinion by authoritative medical organizations on the subject popularly known as "birth control", do you approve of a scientific study of this topic sponsored by this Society?
- A. I: Yes, 29; no, 15; not ans., 13; total, 57.
- Q. II: Or, should this Society itself undertake such study?
- A. II: Yes, 28; no, 15; not ans., 14; total, 57.
- Q. III: If you thus approve, please check in the following list the topics that you believe should be properly considered.
- (a) The necessity for controlling the size of the individual family for purely economic or personal reasons.
 - (b) The excess of childbearing on the physical or mental state of the mother.
 - (c) The control of excessive individual fertility without the presence of organic disease.
 - (d) Constitutional or incurable disease in the mother.
- A. III: a. 25; b. 45; c. 26; d. 48; not ans., 7.
- Q. IV: In case the New York Obstetrical Society or the other societies find no volunteers and no funds, do you think it advisable that a new organization which has funds and volunteers should undertake to study fertility, sterility and contraception—always provided that there be complete medical control of such organizations, that proper case records be filed and studied, and follow-up of patients undertaken?
- A. IV: Yes, 34; no, 14; ind. opinions, 2; not ans., 7; total, 57.

*Presented at a meeting of the New York Obstetrical Society, November 13, 1923, by a special committee previously appointed, consisting of Drs. Harold Bailey (Chairman), R. L. Dickinson, F. C. Holden, G. W. Kosmak, and W. E. Studdiford.

- Q. V: Do you believe that the existing institutions for the treatment of certain groups of constitutional diseases such as insane asylums, tuberculosis sanatoria, etc., and likewise general hospitals, solve their problems in this field by providing themselves with a consulting staff of gynecologists and obstetricians for the carrying out of whatever procedure may be considered necessary, including sterilization or the giving of contraceptive advice, or should such patients be referred for advice and treatment to obstetric and gynecologic institutions?
- A. V: Referred to obstetric and gynecologic institutions, 28; existing institutions, 21; individual opinions, 3; not answered, 5; total, 57.
- Q. VI: Do you advise private patients regarding the regulation of conception?
- A. VI: Yes, 35; no, 4; occasionally, 15; not ans., 3; total, 57.
- Q. VII: If you do not so advise patients, is it for reasons connected with religious beliefs that you object to furnishing information on contraception?
- A. VII: No, 15; not ans., 42; total, 57.
- Q. VIII: What indications do you personally accept for advising contraceptive measures?
- A. VIII: Medical and physical, 47; economic and social, 14; individual opinions, 3; not answered, 5.
- Q. IX: What contraceptive methods do you advise or approve?
- A. IX: Condom, 38; douche, 18; suppositories, 10; not ans., 10; (various other methods one or two votes).
- Q. X: Have you any actual knowledge or experience of methods that are uniformly successful?
- A. X: Condom, 5; douche, 2; other methods, 3; no, 41; not ans., 6; total 57.
- Q. XI: What contraceptive measures do you consider harmful in a physical or mental sense?
- A. XI: Withdrawal, 33; pessaries, and stems, 32; douche, 7; all, 5; not ans., 9.
- Q. XII: Have you seen any evidence or clear-cut pathology attributable to some particular device or procedure?
- A. XII: Yes, 38; no, 12; not ans., 7; total, 57.
- Q. XIII: Have you any particular data on the subject that you can contribute provided the committee decides to collect clinical material?
- A. XIII: Yes, 9; no, 38; ind. opin., 4; not ans., 6; total, 57.
- Q. XIV: Do you give instructions immediately preceding marriage?
- A. XIV: Yes, 14; no, 19; occasionally, 17; not ans., 7; total, 57.
- Q. XV: At such times do you take steps actively to counsel childbearing?
- A. XV: Yes, 26; no, 16; occasionally, 5; not ans., 10; total, 57.
- Q. XVI: Do you give such advice verbally or in writing?
- A. XVI: Verbally, 41; writing, 0; not ans., 16; total, 57.
- Q. XVII: Do you participate in the conduct of a prenatal, obstetric, or gynecologic dispensary or clinic in which contraceptive advice is given to patients?
- A. XVII: Yes, 6; no, 45; not ans., 6; total, 57.
- Q. XVIII: Do you believe that special clinics should be established devoted to this purpose and manned by physicians and nurses?
- A. XVIII: Yes, 10; no, 34; ind. opinions, 8; not ans., 5; total, 57.

- Q. XIX: Should nursing organizations as such be utilized for teaching the use of contraceptives?
- A. XIX: Yes, 1; no, 47; doubtful, 4; not ans., 5; total, 57.
- Q. XX: Should information concerning contraceptives be made generally accessible to the public?
- A. XX: Yes, 4; no, 42; ind. opinions, 7; not ans., 4; total, 57.
- Q. XXI: Do you believe that sterilization rather than the giving of contraceptive advice should be undertaken in the presence of constitutional or incurable diseases, including nephritis, endocarditis, tuberculosis, insanity, bodily deformity, or other conditions which would be rendered dangerous to life by the advent of pregnancy?
- A. XXI: Yes, 27; no, 7; yes with reservation, 20; not answered, 3; total, 57.
- Q. XXII: What suggestions have you for sterilizing women declared to be incapable of childbearing without undue hazard? Mention whether by laparotomy with tubal ligation or resection; by a series of x-ray exposures; by radium applied externally or within the uterus; or by cautery sound to stricture the uterine ostia of the tubes?
- A. XXII: Tubal resection and inversion, 39; x-ray, 10; radium, 7; cautery, 2; not ans., 5.

In general the summary shows that 69 per cent of the 42 who voted were in favor of a scientific study of contraception, sponsored by the Society, and to be undertaken by it; but if funds and volunteers are not available to the Society, about the same number endorse an investigation conducted by an organization under complete medical control.

Excessive childbearing as affecting health and the diseases wherein pregnancy endangers life, are the topics generally favored for study. Economic reasons and individual excessive fertility as subjects for consideration were sanctioned by 50 per cent of the members who answered. The majority oppose special clinics for contraception instruction and there is substantial agreement condemning teaching by nursing organizations as such, or release of information to the general public. In the matter of institutions for incurables, reference to gynecologic and obstetric hospitals is favored rather than advice and treatment by consultants on the staff.

Eighty per cent of the 51 members who answered the questions had no knowledge of a uniformly effective contraceptive and about the same percentage advised and approved of the use of the condom. The douche and the suppository get some recommendation. Withdrawal comes in for rather general condemnation, as do stems and pessaries. Four-fifths of the reporters have seen harm from some device or procedure and a few have clinical reports to be drawn upon, but no reply based on a digest of case reports is given.

The majority give verbal, but never written, instructions in contraception. The indications recognized are physical and medical in all but 10 per cent of the responses, but 24 per cent included eco-

nostic reasons. Over half instruct before marriage, but most of these only occasionally.

Three-fourths are in favor of sterilization in the presence of conditions where pregnancy endangers life. Abdominal operation with tubal closure is the favorite method. A few vote for radium or x-ray and two mention the cautery sound.

(For discussion, see p. 339.)

DIVERTICULA AND DIVERTICULITIS*

BY JEROME M. LYNCH, M.D., NEW YORK CITY, N. Y.

DIVERTICULITIS and diverticulosis have been frequently mentioned in medical literature for the last sixty years, but little attention was paid to this condition until Graser's paper appeared.

Sir Charles Ball, in the early eighties, described several cases that had come under his observation or had been seen by his associates. A remarkably good drawing is shown in his book of a specimen he removed at autopsy. He tells us that while pathology is not infrequent, he felt there was no reason why a diverticulum which became inflamed should not have the same pathology as appendicitis; and, in substantiation, relates a case brought to one of his colleagues, in which an inflamed diverticulum became attached to the bladder, resulting in a fistula.

Practically nothing has since been written that goes any further than Ball, though one must appreciate the lucid and instructive paper of Telling, and the learned contribution of Edwin Beer.

And while almost every paper published on this subject considers the cause, I do not find any additional light since Telling's paper appeared.

Diverticuli have always been divided into the true and the false. The true diverticuli, accepted as of congenital origin, contains all the coats of the bowel and usually occur in certain areas where diverticulation is physiologic; that is, in the region of the fundus of the stomach, the duodenum and the cecum. As you know, the fundus of the stomach is developed as an outgrowth from the dorsal border, its origin being somewhat similar to that of the cecum. In the region of the duodenum there is an outbudding to form the pancreas and the liver. About the last of the first month of fetal life a diverticulum appears on the posterior limb of the U-shaped tube, which later goes to form the cecum and appendix.

Later on, the cecum, when it becomes differentiated from the appendix, is developed by diverticulation. Another diverticulum which frequently remains to give trouble is that which is known as "Meckel's," which is the remnant of the neck of the yolk sac. This occurs in, about

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

2 per cent of cases; but the importance of diverticula of the colon is confined to that variety which is supposed to be acquired.

The factors that are supposedly the cause of diverticulation are, so far as they have appeared in the literature, increased pressure within the bowel, weakening of the muscular tone of the bowel wall as a whole, in fact any factor which brings about weak spots in the bowel through which a herniation of the mucosa might occur; also excessive fat.

All seem to agree that increased pressure within the bowel is the most potent contributing cause of diverticulosis. Without due deliberation, this would seem to be a natural inference; but, on more critical study one is not inclined to take this for granted. It seems unique that gaseous distention of the bowel should be segmental and especially pronounced in the region of the sigmoid. My own experience is that gaseousness is more pronounced in the cecocolon than in the sigmoid.

It has been shown that when the bowel ruptures under pressure, it is always in the long axis; it would therefore seem that if the pressure was sufficient to cause herniation of the mucosa we might expect rupture instead of herniation.

Since diverticulosis occurs more frequently in people over forty, writers seem to infer that the weakening of the muscular tone, a frequent accompaniment of old age, must necessarily be a potent factor in the formation of diverticuli.

There are many cases in the literature of diverticulosis in children, and while this is not proof of congenital origin of diverticulosis, it is significant. We have all seen cases of megacolon where the conditions are such as have been assigned as causative factors in diverticulosis; but in no instance, to my knowledge, has diverticulosis been found associated with megacolon.

The influence of obesity by bringing about a general weakening of the musculature and providing a series of spots of lowered resistance to pressure from within, especially opposite the appendices epiploicae, allows the mucous membrane to herniate through these weak spots. Bland-Sutton has pointed out that the submucous fat is continuous with that of the appendices epiploicae and so exerts a directly predisposing effect on these hernial out-pushings. In addition to this, Telling has suggested that where the blood vessels penetrate there is a relative weakness of the muscular wall, and that as the blood vessels are constantly subject to change in calibre, herniation might occur at this point. He does not mention, what seems to me, the most important fact, that wherever a blood vessel penetrates muscular tissue it is surrounded by a connective tissue tunnel. We all know that there is a great variation in the quality of connective tissue in individuals, and that as connective tissue holds all the muscular bundles together and influences the tone of muscle we might infer that diverticulosis is the

result of a poor quality of connective tissue, which by easily giving way under pressure might permit herniation of the mucosa.

This, however, offers a fertile field for investigation. Lewis has pointed out that extension of the intestinal glands of Lieberkuhn through the muscularis mucosa in relation with lymph nodules, is a common occurrence during fetal life. The distal diverticuli with the fork-shaped glands are primary submucous glands, which become surrounded by lymphoid tissue, and he believes that it is quite possible that these structures may give rise to pathology as the result of diverticulation. In support of this is the fact that in many instances diverticuli have been found in a number of young children and this should offer some support to the congenital theory of diverticulitis.

I do not wish it understood that I believe that I have proved or disproved anything. I do feel, however, that there is almost as much support on one side as the other, and I hope by offering some proof of the congenital origin of diverticuli I may stimulate investigation as to the cause of this very interesting condition. In my opinion, causes so far assigned to diverticulosis should be accepted with some reserve. Is it not much more reasonable to suppose that the glands of Lieberkuhn have so deeply penetrated the bowel beyond the usual depth that they form pockets, which, under pressure, plus a poor quality of connective tissue, may give rise to herniation of the mucous membrane and form diverticuli? Taking for granted the presence of diverticuli, one can readily see the possibilities of a secondary pathology. This may be brought about by bacteria passing through a very thin membrane. Here we have leading from the inside of the bowel narrow necks ending in dilated, flask-like pouches outside of the intestine. The outside or dilated portion is formed of mucous membrane and peritoneum.

At first the sac may be so thin as to permit the bacteria to filter through, resulting in a local peritonitis without perforation, or as happens in appendicitis, the sac may rupture, giving rise to a local abscess or a general peritonitis.

Owing to a low grade inflammation with ulceration, we may have a proliferation rather than a destruction of tissue, resulting in a tumor formation somewhat similar to that seen in hyperplastic tuberculosis and ending in a stenosis of the bowel. This is not an infrequent occurrence and is one that is often mistaken for carcinoma. In this type of inflammation, which leads to the formation of a definite, tumor-like mass, in which the diverticuli are buried in fibrous tissue, it is impossible (except microscopically) to distinguish between benignancy and malignancy.

It has been stated that the fact that a history can be obtained of long standing trouble on the left side, which perhaps has been substantiated by proctoscopic examination, it is evidence of diverticulitis rather than

carcinoma. This is an error. In the first place, one can never tell when a carcinoma may become implanted on any chronic inflammation. I have known carcinoma to become ingrafted on strictures that I have observed for ten years. And I have known of many instances, four in my own practice, where both carcinoma and diverticulitis co-existed.

In the 116 cases seen at the Mayo clinic, malignancy was found in 14. In 12 of my cases, 4 were malignant.

The formation of adhesions between the sigmoid and other viscera, such as the small intestine and the bladder, not infrequently happens. In one of my cases a patient was sent to the hospital suffering from intestinal obstruction; at operation we found a diverticulum had become adherent to a loop of small intestine and the inflammation from this contact was the cause of the obstruction. In another case a loop of small bowel had become incarcerated in a hernia, and though this woman had had diverticulosis (probably of long standing), it was only discovered because of the obstruction.

The sigmoid is the most variable organ in the body. It may attain an enormous size. This gives it a wide range of mobility, so that it may become adherent to any organ to which it may reach. I have seen it adherent to the cecum, appendix, bladder, uterus and broad ligaments. With this fact in view we can readily imagine that, in case of diverticulitis, it might form, not alone adhesions, but also abscesses. No one of these, however, would prove as far-reaching and serious as its attachment to the bladder. And this, unfortunately, happens not infrequently. The first evidence of trouble may be, as has happened twice in my practice, the passage of gas through the penis, followed later by feces and pus. A case of adhesion of different loops of the sigmoid to one another, with the co-existence of severe inflammation resulting in the matting together of the sigmoid eventually followed by obstruction, came under my observation in one instance. This patient had hallucinations and delusions which immediately cleared up after an ileostomy had been performed. She died a year later from carcinoma. I was able to obtain an autopsy, which showed a carcinoma engrafted on an old diverticulum.

Perforation of the diverticulum occurred in a patient I saw in consultation. In this instance I was able to make the diagnosis of diverticulitis previous to the perforation. I suggested at the time a colostomy. This was refused and a week later perforation occurred with general peritonitis and death.

Many cases are recorded of perforation of a diverticulum, but not in all cases are they necessarily fatal. Just as in appendicitis, the acuteness of the onset and the virulence of the infection are very often determining factors in the subsequent course of the disease.

A diverticulum may become distended from fecal matter and the feces become inspissated without resulting in ulceration, and subsequent-

ly from a twisting of its pedicle become detached from the bowel to roam around the abdominal cavity as a foreign body.

Telling reports a case of metastatic suppuration in the liver in one instance. Severe hemorrhages, the result, I imagine, of ulceration involving a small artery, occurred in a case of diverticulitis I saw in consultation.

Chronic inflammation of the mesentery, with thickening and shortening of this attachment resulting in angulation and deformity has been known to follow diverticulitis of the sigmoid. Of course this occurs in other conditions, as I have seen it happen in nonspecific inflammation of the colon and there is no reason why it should not occur in the specific infections. Indeed, when I come to think of it, the formation of intramural abscesses in the nonspecific inflammations are of frequent occurrence. In fact, perforation occurred in one case I recall.

The clinical aspects of diverticulitis are duplicated by appendicitis, except that the symptoms are located on the left instead of the right side; so-called left-sided appendicitis.

The differential diagnosis between diverticulitis and nonspecific inflammations of the bowel, with metastatic abscesses, followed by sigmoiditis, may be difficult. However, in the majority of cases, these can be distinguished by a proctoscopic examination supplemented by the x-ray. In the majority of instances the nonspecific inflammation of the bowel is limited to the mucosa, so that there is little difficulty in separating one from the other.

Peritonitis occurring on the left side as a result of pelvic inflammations and ovarian strangulation may be difficult to distinguish, particularly if the sigmoid has become adherent to the adnexa; but the diagnosis can usually be cleared up by a vaginal examination.

Dysentery may, but is not likely to be confounded with diverticulitis. Examination of the stool will show ameba if present.

The acute fulminating type, which is not infrequent, especially when associated with a constricting carcinoma, may give no previous warning of the existence of any pathology until a rupture of the bowel takes place. Two very interesting cases of this description were recently reported in the *British Journal of Surgery*.

We must always bear in mind the possibility of such happenings as the result of constricting carcinoma, without diverticulitis; but this same ending has occurred in nonspecific inflammation.

In nonspecific inflammation we usually have a history of long standing diarrhea, with blood and pus in the stools, and as the symptoms are much more acute and the diarrhea prolonged there is ample time to distinguish between the two.

As tuberculosis of the bowel is usually secondary to tuberculosis

in some other part of the body, and as a patient suffering from tuberculous colitis loses flesh very rapidly, it is not commonly confounded with diverticulitis. There is a form of tuberculosis, namely hyperplastic, which we find difficult to differentiate from both peridiverticulitis and carcinoma. Indeed, only in a microscopic examination can we put confidence.

One thing that has impressed me is the fact that though diverticulosis occasionally involves the entire colon, I have never seen, nor can I remember that it has been mentioned in literature that diverticulitis has occurred in any region but the sigmoid. I do recall one instance of intussusception which was the result of an inverted diverticulum of the cecum and this brings up a very interesting problem as to why pathology so frequently follows diverticulosis in the sigmoid. I believe it is due to the great size, mobility and frequent change of position of this organ, and possibly injury, due to hard fecal matter, may be the root of inflammation in this region. Again, the greatest pressure is exerted in the region of the sigmoid, it being forced into the pelvis where the diaphragm is fixed.

Treatment.—The treatment of diverticulitis should be conservative. When an acute abscess occurs the same treatment applies as in any other part of the abdominal cavity. A stoma is always indicated preliminary to any radical procedure, and it is needless to mention that it should be placed as far as possible from the seat of inflammation. A stoma, by directing the fecal current, prevents further infection, allows the patient to recuperate and puts him in the best position for subsequent radical procedure.

205 EAST SIXTY FIRST STREET.

A STUDY OF THREE HUNDRED CASES, PRIVATE PATIENTS,
SIX WEEKS OR LONGER, POSTPARTUM: WITH REFER-
ENCE TO THE CONDITION OF THE PELVIC FLOOR,
CERVIX AND FUNDUS*

BY BURNLEY LANKFORD, M.D., NORFOLK, VA.

AMONG the methods of preventive medicine, which is the slogan of today, may be justly mentioned all the means employed for better obstetrics. We note a tendency to more careful examination and more frequent observation of women during pregnancy; hospital deliveries with consequent more careful, accurate and aseptic immediate repair of birth injuries; more careful observation and advice during the involution period; a more thorough discharge examination at the sixth week or later, at which time, if further advice or treatment be necessary, or helpful, the patient may be kept under observation as long as may be needed, to restore her to her previous state of health.

With the object of checking up my own obstetric work, and also of presenting a paper for discussion, I have gone over the records of three hundred consecutive cases, with reference to their final examination, taking into consideration during this study the condition of the pelvic floor, cervix and fundus. By the end of the sixth week after delivery, the generative tract of most women will have returned, approximately, to the normal state, and for that reason the end of the sixth week is taken for the discharge examination, this examination being final only in those cases considered to be normal.

Some years ago a gynecologic friend made the assertion that no woman ever passes through a labor without showing evidence of trauma to her genital tract, and that she will always thereafter show some evidence of birth injury. I admitted that he had the preponderance of evidence on his side, and that his statement was, in the main true. It is equally true, however, that not every woman who shows some anatomic trauma, gives a history of subjective symptoms the result of parturition. Furthermore, this particular study would seem to show that not every woman who has borne a child and who has suffered some birth injury, shows either subjective symptoms or objective signs of such injury thereafter.

The gynecologist who does no obstetrics, and the general surgeon

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

who does no obstetrics, see only the obstetric "failures" who seek their aid, whereas the obstetrician who repeatedly confines the same women, and who follows up all his cases, does frequently see what he may call obstetric "successes"; that is, women who have borne one or more children and who yet remain symptom-free. Once in a while he may even find what, in his pride he calls an obstetric "triumph"—that is, a woman who has passed through a delivery and whose genital tract and general condition thereafter, may almost simulate that of a nonparous woman! There is, to be sure, a small enough number of such women to keep any obstetrician humble, but at the same time enough to furnish a goal towards which to work. The higher the ideal, the greater will be the effort to attain it, and the greater the effort, the nearer perfect will be the result in accomplishment, even though the ideal be seldom or never reached.

In this study of the genital tract, beginning from below, the first note was made upon the appearance of the vulva, this being described under three headings: first, those showing no gaping of which there were 115; second, those showing slight gaping, of which there were 139; third, those showing marked gaping, of which there were 46. Slight gaping of the vulva seem to be the normal condition of parous women and this slight gape is not accompanied by any uncomfortable, subjective symptoms, *per se*. This study has also seemed to show that a slight vulval gape does not necessarily mean an impaired pelvic floor, certainly not from a functional standpoint. On the other hand, a marked vulval gape certainly does mean impaired function and any woman showing such a condition must be classed as an obstetric "failure."

The second note was upon the tendency to, or actual presence of cystocele, or rectocele, or both. What I termed a beginning cystocele was found in 24 cases, a beginning rectocele in 10 cases and a cysto-rectocele in 29. In none of these women were the subjective symptoms of sufficient severity to demand immediate surgical procedures, though the 16 women to be mentioned later, who were advised to have an early repair, were all among this number.

The next point to be noted was the tone and condition of the levator muscles. These were judged by their thickness, passive resistance to two examining fingers, and by their power of voluntary contraction. This power of voluntary contraction is elicited by directing the woman to contract the muscle against the examining fingers, and where she does not understand what is meant, or pretends she does not (as some will) the contractility of the muscle can be instantly brought out by directing her to contract her muscles just as she would at the end of a bowel movement. This takes her mind from the vagina as a sexual organ and focuses her attention upon

her bowel and she has no objection to displaying the power of the rectal muscles. The levators were classed "excellent condition" when they were thick, of well appreciable passive resistance, and when the muscle tone, or voluntary contraction was very marked; of such there were 157. The levators were classed as "fair condition" when the above characteristics were present and easily appreciable, but not to such a marked degree as the preceding class; of these there were 102. They were classed as "poor" when they were thin, of slight resistance, showed separation in either vaginal sulcus, and had very poor power of contraction; of such there were 36. Of those in which the levator action was apparently absent, there were six. From a study of these muscles it would appear that where the levators are thick and have a fair degree of passive resistance, and where the voluntary contraction is what was classed as excellent or fair, there need be no fear of functional or anatomic poor results following labor, as far as the pelvic floor is concerned. With the other two classes, one may confidently look for trouble and predict the need for reparative surgery in the near or not very distant future. It is much more conducive to kindly feeling from the patient in the future to predict that she will need reparative surgery, than to say nothing and have her informed at some later date by some confrère that she had been left in very poor condition after her last confinement.

The next note was upon the condition and position of the cervix. The condition regarding lacerations was described as follows: slight, unilateral 80; deep unilateral 30; bilateral 99; stellate 16; and no appreciable laceration 75. The number of cases showing apparently no laceration, came as a surprise to me, because I had thought that practically every woman who had had a baby, had a laceration of the cervix; however if these 75 women had lacerated cervixes, the lacerations were so slight as not to be noted by my gloved finger. The position of the cervix was described under two main heads, though it would vary slightly from either head in some cases. The cervix was called "back," that is, at right angles to the vagina, which is taken as the normal position; and as "in line with the vagina," variations of which constitute the abnormal positions. Of those with the cervix "back" there were 200; of those in line with the vagina there were 96.

The fundus was studied with regard to its position, size, consistency and mobility. The position was classed under three heads, "forward" 175; "mid-position" 45; "back" or retroverted 79. The size of the fundus was estimated as "normal" in 212; or as larger than normal in 85. The consistency was taken to be normal in 237, boggy in 18, and tender in 35. The uterus was found to be "mobile" in 284 cases and "immobile" in 11. In the immobile cases, the fundus was held back so tightly (probably by adhesions) that it could not

be brought forward by a safe degree of force in the manipulation used, or it was so tender or so painful to the woman that it was not deemed wise to persevere in efforts to replace it at that time.

Of those uteri found in backward displacement, the following notes were made. Those replaced at once, either by easy and simple bimanual manipulations, or with greater difficulty by means of tenaculum and bimanual efforts, and thus replaced remained in correct position thereafter, despite immediate exercises calculated to redisplace, and checked up by a further examination, one week or more, later. In this class, there were 40. (Did not return for this check-up examination, four cases.) The next class was of those replaced, but who showed a recurrence of the displacement, either immediately, after the usual exercises, or upon their first return for the check-up examination. These women were fitted with a pessary, which they wore from one to three months, were found to be in good position at the end of the pessary period, and were again checked up by another examination one or more weeks after the pessary was removed. Of such women there were 59. Five required an anesthetic before the displacement could be corrected. One woman wore a pessary three months, one four months, two five months, one seven months, one eight months, all eventually cured. Of those that recurred, whenever the pessary was removed, there were five. One of these last mentioned wore a pessary for seven months (off and on), made several engagements to go to the hospital to have a suspension done, but finally became pregnant with pessary *in situ*. It was allowed to remain until the fundus rose out of the pelvis, after which the pessary was removed and the pregnancy went on to term. (This woman's uterus has remained in good position since this last pregnancy.) There were 24 cases showing a general descensus, 19 showing slight decensus, and 5 a marked decensus.

Sixteen of these 300 women were advised to have an early repair of the pelvic floor, from a standpoint of comfort or function, the function of the pelvic floor, it must be remembered, being a varied one.

In summing up, there were 225 out of the 300 in which appreciable lacerations of the cervix were found, a condition that we cannot do very much to correct, other than by surgery, when such lacerations are found after the puerperium. The problem to be worked out here, in the interest of better obstetrics, is to prevent the cervical laceration, which is far more ideal than a repair, no matter whether the repair be made immediately or later.

There were 119 cases showing some abnormality in the position of the fundus, 74 of them in which the fundus was completely displaced backward, and would certainly have given some future trouble. All but five of these 74 were put back into approximately normal position

and remained so, checked up by subsequent examinations. This seems to show that a very large number of women develop backward displacement after parturition, but also that such a condition is easily amenable to proper treatment. Right here we undoubtedly have a large field for better obstetrics, first in the effort to prevent such displacements, and second, in the recognition and treatment at the end of the period of involution. There is little doubt but that the large majority of women who develop backward displacement after child-bearing, will eventually need the aid of surgery to make them comfortable, or to put them in a condition of ordinary physical efficiency.

This leads us to the question, why do so many women have these displacements following labor? It seems reasonable to suppose that one of the chief reasons why this condition occurs so often, is the relatively long time that the lying-in woman spends on her back. A woman in bed after labor, will spend the larger part of her time on her back, and the danger of this continued position becomes apparent *after* the first ten days. During the first ten days, the uterus is an abdominal organ and cannot be displaced because it has not gotten back into the pelvis. After this time however, it becomes a pelvic organ, and it is probably true, in the cases of displacement, that the suspensory ligaments which have hypertrophied with the growth of the fundus during pregnancy, have not involuted as rapidly as has the uterus, and if the fundus be forced back, possibly by straining of the abdominal muscles while the woman is in the dorsal position, or almost certainly by an overdistended bladder, the suspensory ligaments are not able to exert the customary degree of pull in righting the uterus, as they do when the normal sized fundus is temporarily and physiologically displaced. Also, the same intraabdominal forces that ordinarily are exerted upon the posterior surface of the uterus (holding the fundus forward), when the fundus is displaced backward, will exert the same force upon its anterior surface and hold it back, with greater likelihood of keeping it back, because of the larger size of the fundus at this period. It is not the full bladder nor the overdistended bladder of the first week or ten days that brings about this displacement, because the uterus at this time is an abdominal organ and *cannot* retrovert. Therefore, the time to caution the patient against overdistention (often quite voluntary) would seem to be the second and third week postpartum, while the uterus is still large. The ease with which this frequent complication, fraught with so much discomfort and semiinvalidism in the woman's future, can usually be corrected, makes it obligatory upon every physician who does obstetrics, to follow up his cases for six weeks (or six months if necessary) in order to leave them in the best possible condition.

At the present time, the subject of prenatal care seems to be largely

filling the literature. The study of even so few cases as those presented here, would seem to show that in our efforts to reduce our obstetric morbidity and mortality, we should not permit our antepartum care, extremely important though that is, to overshadow our care of the patient during the puerperal and late postpartum periods.

530 SHIRLEY AVENUE.

(For discussion, see p. 323.)

SEPTIC INFECTIONS FOLLOWING CHILDBIRTH, OR AN ANALYSIS OF MATERNITY MORTALITY CONSIDERED FROM THE STANDPOINT OF INCREASE OF DEATH AMONG MOTHERS*

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AT a period of time, especially in the history of our Association, when such vast strides have been made in the treatment of disease, removal of pathologic conditions surgically, operations upon every organ of the body are performed successfully, and the prophylactic treatment of disease is carried to such a high plane, there still remains one department of medicine which, a study of statistics will show, has not kept pace with this wonderful development. I refer to the treatment and delivery of the expectant mother in the hands of the general practitioner. While I do not attend these cases personally, still, as a gynecologist, I am often called in consultation, when infection presents, to see some of the after-results. It seems to me that it becomes our duty to investigate and present the result of our studies in a way that will aid our public health officers in lessening the mortality percentage.

It is to a society such as ours that the general practitioner looks for guidance in his work, and I know of no more important task before us at the present time than in calling the attention, not only of the medical profession, but of the general public as well, to the fact that maternal mortality is not decreasing in a commensurate ratio with the mortality rate from other causes. In fact, I believe it is slightly increasing, and that measures should be adopted—are already being adopted—in order to investigate and report upon this condition. The public should be enlightened upon the facts in the case, and should be educated to cooperate with the medical profession in reducing maternal mortality to a minimum.

Midwives, as far as statistics are available, seem to make a better

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

showing than the ordinary practitioner, which may be explained in two ways: first, the general practitioner is usually in a hurry when attending a confinement case, and makes frequent and unnecessary vaginal examinations with the resultant increase of the chances of infection, whereas, on the other hand, the midwife is content to sit patiently by and let Nature perform her part making few examinations, consequently with a good deal less chance of infecting the woman in labor. Second, the midwife, in a great majority of the cases, attends only the normal confinement, sending for the doctor whenever anything abnormal presents, with the result that if anything goes wrong the physician is charged on the records with the maternal death, and not the midwife, to whom, in many cases, it should be properly attributed, thus, apparently giving the midwife a better record than she should have, and the physician a poorer one. I believe there should be a classification in which both the midwife and physician are in attendance and sharing the responsibility. Statistics do not, as yet, show how many of these fatal cases attended by a physician had first been in the hands of a midwife.

In January, 1923, the Department of Health of the state of New York issued a circular entitled "The Geographical Distribution of Maternal Mortality and Stillbirths in New York State," which gives us some very interesting information. The circular is edited by Dr. Otto R. Eichel, Director of the Division of Vital Statistics, Department of Health of the state of New York, and I am quoting very freely in the following pages from his letter of transmittal to the Commissioner of Health of the State of New York. He first compares the maternal mortality in the state, excluding New York City, for the years 1910 to 1921. The mortality rates are based upon the number of maternal deaths per 10,000 births, including stillbirths.

In 1910 the maternal mortality rate, outside of New York City, from all puerperal causes, was 78; in New York City 66 per 10,000 births. The mortality rate for puerperal septicemia was 28 and 18 respectively. The maternal death rate, from all puerperal causes, gradually dropped to the year 1916 when it was 54 and 46 respectively. The death rate from puerperal septicemia dropped to about 20 and 18, where it has practically remained ever since, showing some improvement in that direction.

In 1917 the maternal death rate from all puerperal causes gradually rose again, and reached its peak during the year 1918, when it was 82 and 70 respectively. This increase in the death rate was due to the influenza epidemic, and possibly also to the inability of the woman in labor in the rural district to receive proper medical attendance, as many physicians were away in service. That year the mor-

tality rate, from puerperal septicemia—to which I have previously called attention—remained about the same.

For the year 1921 the mortality rate from all puerperal causes was 60 outside of New York City and 54 in New York City, respectively—not quite so good as in 1916. The mortality in 1921, from puerperal septicemia, was 21 and 12 per 10,000 births respectively, a little better than the year 1916, and quite an improvement over the year 1910, and is the most encouraging sign we have, as it is towards the stamping out of puerperal septicemia that we must concentrate our efforts. Under proper surgical technic puerperal septicemia should be practically abolished. May the day soon come when the statement can be made that puerperal septicemia will be as rare a complication of childbirth as an infected wound following an aseptic abdominal operation is today.

In the year 1922 the legislature of the state of New York, recognizing the great importance of maternal mortality, passed an act creating the Division of Maternity, Infancy and Child Hygiene in the State Department of Health, and although this division has been functioning only a little over a year, yet great good has come from it, especially in collecting statistics in regard to maternal and infant mortality, informing, not only the profession, but the public as well, of the danger to the pregnant mother, and of some of the steps that can be taken to improve the situation.

Study of the mortality rate in the state of New York shows wide variations in different sections but as yet there has not been time enough to investigate the causes and reasons why two communities of practically the same size, with the same industries, the same competent obstetricians, and situated practically the same in regard to health conditions, should differ so widely in their maternal mortality rate. It will take further time and investigation to thoroughly ascertain the causes and apply the remedy.

Possibly the nationality of the inhabitants may have something to do with the problem. It is very well known that women of foreign birth are more prolific and resist infection better than the native born woman, and therefore give a lower maternal mortality rate than in those localities where the majority of the mothers are American born.

Another possible explanation is that in some localities the pregnant mother prefers the midwife, as those of German and Italian descent, and the mortality rate may be increased in those localities where they predominate, because of incompetent midwives; however, whatever the explanation, the fact remains that statistics prove certain localities have a much higher maternal mortality than others.

Another interesting study in maternal mortality is the age of the patient and the cause from which she died. The Monthly Vital Statistics Review, edited by the Dr. Eichel of the Department of Health

of New York, in the Bulletin for March, 1923, gives a very interesting table on this phase of the subject. He places the maternal deaths in two divisions,—those from puerperal septicemia, and those from other puerperal causes. He finds that, beginning at the ages from 15 to 19 the deaths in the first division average about 20 per 10,000; it then drops a trifle to 18 and stays there until about the age of 30, when it takes a sudden rise, and by the time the age of 49 is reached it is as high as 34.

In the other group the line for the ages 15 to 19 starts at about 24, then drops to 28, then gradually rises till at the age of 49 it reaches 110—a very high per cent. The figures for New York City are somewhat lower.

The figures which I have quoted are applicable only to observations made in the State of New York, but it is fair to assume that they hold good in about the same ratio in the other states.

In a period of about two decades many organizations, including this one, have greatly assisted Nature in the cure of many ailments at one time hidden and unknown to our older and able practitioners, and who, had they possessed our laboratory knowledge, would have done equally as good work as the surgeons and medical men of today. Notwithstanding our advances and victories, there are yet many serious manifestations of disease which require our patient investigation. Our laboratories of research, our philanthropists, even our state and national governments were never so thoroughly equipped, so willing to render assistance as at the present time. I am very much in earnest in calling your attention to this subject of maternal mortality, concerning which the general practitioner is appealing to us for aid in our outlying districts, where even midwives are seldom found, and where at certain times of the year, too often no physician can be secured to make the necessary visits required in an obstetric case. When the doctor makes the effort and reaches his patient after a perilous experience with auto, or sleigh, he has in mind other cases he ought to visit, and even contrary to his good judgment applies the long or short forceps rather early, a slight or more serious laceration occurs which Nature always resents, and which becomes the source of an infection which the system is unable to resist. If the laceration is severe the physician may make an effort at immediate repair. He is alone, too often no competent nurse at hand, he is frequently tired, and in a rather doubtful sterile condition he does his work. The building, the log house or the lumber camp, or at times mining district, is in itself a factor that lends aid to an infection. In a few days word comes to the anxious physician that Mrs. B. has had a chill, and that grandmother or a less available attendant says she has done everything she knows to do but the doctor must come at

once, and now, the sympathetic physician makes one of his heroic efforts to reach his patient and after hours of struggling through rough and muddy roads, or fighting snow drifts and perhaps a far worse condition, melting snow, aided by one or more friends or faithful neighbors, he reaches the sick room. There is no chart to give the history since he left the sick mother. He does his best to secure a history while warming himself or taking a bit of nourishment and finds, as he believes, an abscess from an infected suture disgusted at being placed in contact with tissue so unclean. Or he is positive a curettement is needed, and who can estimate the courage required now to aid the suffering one? He does the best he can under the circumstances, sometimes wins a victory, yet too often meets defeat. Is there any wonder that manufacturing interests such as the tanning of hides or leather, the cutting of lumber, have been known to offer a first-class physician and surgeon anywhere from fifteen to twenty-five thousand dollars a year to come and take charge of the employees and their families?

Another channel for relief which I believe should be adopted is the establishment of the small hospital of from ten to twenty beds, either at the village cross roads or larger mercantile centers. To this hospital could be brought, from a distance of ten to fifty miles, the patient who is about to pass through her accouchement, for the proper length of time and where she can receive the now often neglected prenatal treatment. These hospitals should be in charge of a competent graduate nurse, who is also able to make such bacteriologic examinations as may be necessary, and she should have one or two nurses to assist her.

I have talked with several of our best practitioners in these isolated rural districts, and have been much impressed with their views and approval of a medical center, with such a hospital, where they might be able to care for obstetric cases presented from the outside districts. I believe this would be an important factor in dealing with the situation.

In the New York State Journal of Medicine for August, 1923, is a symposium of papers that were presented and read at the meeting of the state society in New York City, May 23, 1923, on this subject. These papers are so complete that it is quite possible for one to make an exhaustive analysis. I believe they are worthy of being reprinted in pamphlet form, with extracts from other sources, together with the report of our committee, for general free distribution. I am quite certain that sufficient funds could be secured from some one of our educational foundations with which to meet this expense, and am inclined to believe it would be well to refer this idea to the committee of which Dr. Mosher is now chairman, and who is so thoroughly

alert, and as desirous as are the other members of the committee to meet what the public, together with members of our profession, desire,—the lessening of maternal mortality.

It is not at all surprising that our Congress has seen fit to take up this subject and has passed a certain bill, which, although possessing points of great value, has not commanded the endorsement of some of the states. This was particularly true regarding New York.

It is a source of great encouragement to us all that our Association some time ago appointed a committee to investigate this very important subject, and that they are making such excellent progress.

Taking all these factors into consideration, it would then appear that the maternal mortality rate is far too high, and that it is time for this and kindred associations to work out a solution of the problem.

28 EAGLE STREET.

(For discussion, see p. 326.)

DUPLEX UTERUS WITH MULTIPLE PREGNANCY: REPORT OF CASES*

BY WILLIAM SEAMAN BAINBRIDGE, Sc.D., M.D., C.M., NEW YORK

PREVIOUS to pregnancy, the pathologic significance of duplex uterus is slight; practically the only symptoms to which the deformity may give rise are dysmenorrhea and occasionally difficulty in coitus. The double uterus is not particularly infrequent; many claim that it is found in about 14 per cent of congenital uterine deformities. The form of the uterus may indicate its double origin and the varieties may range all the way from a slight increase in duplication to two distinct uteri with separate appendages and two vaginæ. Vallisneri relates the history of a woman who was poisoned by cantharides, who had two uteri, one opening into the vagina and the other into the rectum.

With uterus duplex, menstruation may take place every two weeks—first from one compartment of the organ, then from the other—each period lasting two or three days and the patient losing in one month only about as much blood as at a normal menstrual period. During pregnancy the unimpregnated horn continues to menstruate. The dual organ seems to favor conception. Picot reports a double uterus where there were fourteen abortions, and Gouterman cites a case of three children born from the right horn and nine abortions from the left horn of a dual organ.

With double uterine pregnancies, anomalies are not uncommon.

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

Dibierre quotes an instance of a woman who bore one child July 16, 1870, and another October 31 of the same year, both at full term. She had but three menstrual periods between the confinements. In commenting on this case Hirst says: "There must be kept in mind the possibility that one of the children might have been of protracted gestation or the other of premature birth." In my opinion there exists no reason why both of these conditions might not have been simultaneously present in a case of double uterus where impregnations had taken place at different times. Jellinghaus reports a case with a full term child in one uterine horn and a four months' fetus in the other, and another instance where the patient was delivered of a full term white infant from the left horn, and two months later a full term

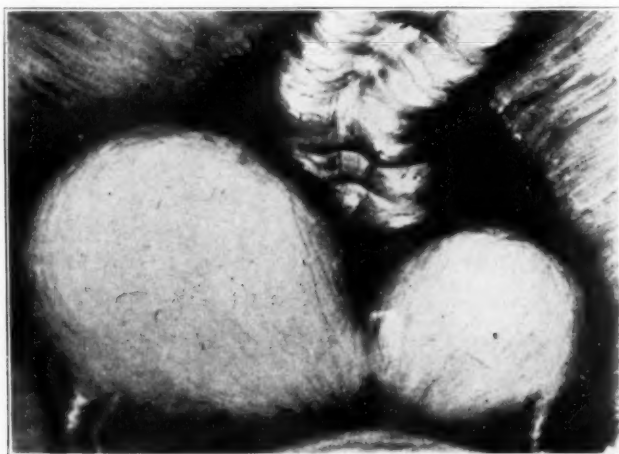


Fig. 1.

black infant from the right horn of the uterus. Ross relates an instance of a triple pregnancy in a double uterus, and Cleveland describes a discharge of an anomalous deciduous membrane during pregnancy, which was probably from the unimpregnated half of a double uterus.

There seems to be a considerable difference of opinion among obstetricians regarding the extent to which a double uterus may complicate labor. It would seem logical to assume that the unimpregnated half, especially if congested in sympathy with the development of the impregnated side and possibly thickened in consistency by sympathetic contraction during labor, might obstruct delivery to some degree. DeLee reports a very difficult delivery where the child straddled the septum of the double organ. Malpresentations of the fetus and a faulty direction and insufficient expulsive powers are common in double uterine confinements. In the case of double uterus with multiple pregnancies which I herewith present, the patient had two mal-

presentations of the fetus at previous deliveries, but otherwise seemed to suffer but few ill effects during labor from the deformity of the organ. The case is of interest because of the dissimilarity in the confinements preceding and following the one at which the additional uterine compartment was disclosed, as well as an example of justifiable abortion.

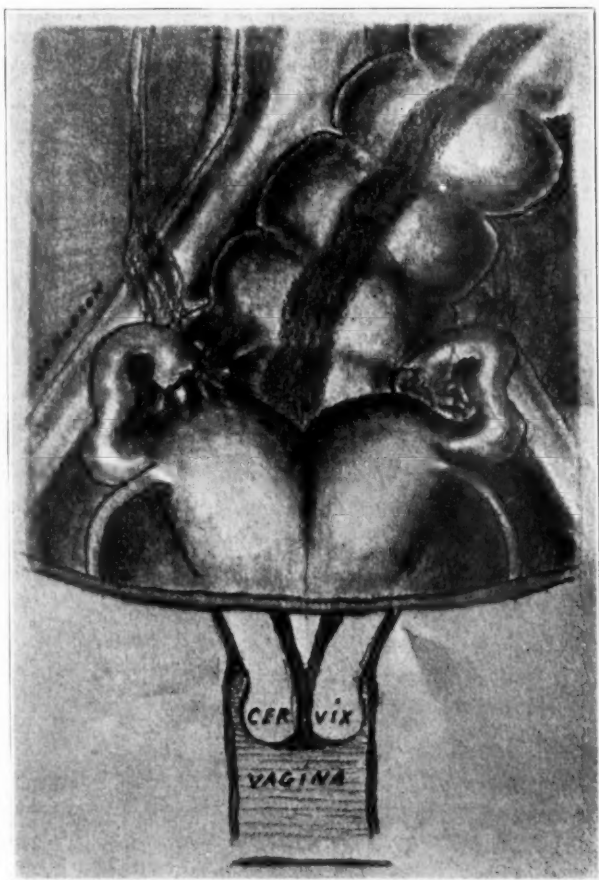


Fig. 2.

CASE 1.—Mrs. J. M., thirty-one years of age, had four children. Menstrual periods commenced at fifteen years, were profuse, painful and irregular. The patient was married at twenty-three years of age. First pregnancy: female, born February 9, 1906, at full term, birth was normal. Second pregnancy: male, born May 9, 1907, stillbirth. Third pregnancy: male, born December 15, 1908, at full term, arm presentation but child normal. Fourth pregnancy: female, born November 29, 1910, at full term, and child normal. Fifth pregnancy: August 21, 1911. Patient had an uncontrollable uterine hemorrhage. I was called in consultation, operated and found a duplex uterus with a single cervix. (Fig. 1.) The right half of the uterus contained the remains of a dead fetus—miscarriage of about four months. There was a living fetus in the left body of the uterus.

In order to stop the hemorrhage in the right side of the dual organ, it was

necessary to curette both halves, as the uterus would not contract and the mother's life was in immediate danger. The patient had an uneventful convalescence and a rapid recovery. She had two subsequent pregnancies; one a full term child, with normal delivery, and the other a miscarriage at three months.

In this case the great variations in the types of pregnancies were probably due to the malformation of the uterus. However, the extra compartment offered little, if any, resistance at delivery. Doubtless, it rose spontaneously out of the pelvis or was pushed up manually during labor.

CASE 2.—In April, 1923, a second case of duplex uterus came under my observation. In this instance, the patient was operated on by me for degenerating fibrocysts of the ovaries and retroflexion of the uterus. When the uterus was brought into position, it was observed that a partition divided the fundus and extended practically to the internal os. (Fig. 2.)

The patient was forty-four years of age. She had been married eleven years and had never been pregnant. Her chief preoperative complaint was backache of a type so severe that she was often unable to stand.

(For discussion, see p. 321.)

FULGURATION OF HUNNER ULCERS*

By H. DAWSON FURNISS, M.D., F.A.C.S., NEW YORK CITY

THE cause or causes of Hunner ulcers is still obscure, though the most widely accepted idea is that there is some relationship between them and focal infections. Hunner thinks there is also a connection between ureter stricture and this form of ulcer, but as he believes the commonest cause of stricture to be focal infection, the stricture and the ulcer might be, according to this view, a common result, and not an instance of ulcer dependent upon stricture.

These ulcers, while not common, are not infrequent. The history is usually so characteristic that a diagnosis can often be made on it alone. This is frequency, diurnal and nocturnal, of almost clock-like regularity, pain when the bladder reaches a definite degree of fullness, and pain on urination. The urine is generally pus and blood-free, though a few cells, both red and white may be found on careful examination.

Unless a brilliantly lighted cystoscope is used, these ulcers are often missed, but with proper illumination they can be readily seen. There may be one or more scattered over the bladder wall; stellate scars of old, healed ulcers may be seen, leading one to think that at times there is a spontaneous cure, and also that new ulcers may develop in other locations.

The typical ulcer appears as a reddened area, round or oval, varying in size from 0.5 to 2 cm. in diameter. The central portion is denuded of epithelium and may show a slight whitish deposit in the

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

center. On the periphery of the ulcer is seen a network of radiating arterioles. Occasionally these ulcers show a marked edema and may be 3 to 5 cm. in diameter. I have never seen one with granulations, as are found in tuberculous ulcers and ulcerative cystitis. The visible portion is only a small part of the bladder lesion. There is marked thickening of the bladder wall, due to round cell infiltration, often extending to and involving the peritoneum. On over-distending the bladder one can see these ulcers bleed.

Treatment.—Resection of the bladder is a formidable operation. It is difficult to determine just how much to resect as the ulcers are more difficult to see at operation than with the cystoscope. For this reason one is apt to resect an insufficient amount or overdo it. Also there is no assurance that new ulcers will not occur.

To avoid a major operation that did not hold forth any more hope of cure or freedom from recurrence than resection, several urologists decided upon fulguration as a possible means of curing these ulcers. Kretschmer was the first, as far as a cursory review of the literature has shown, to publish his results. In *Surgery, Gynecology and Obstetrics* he reports a number of cases that had been greatly benefited. I understand that A. B. Cecil has treated a number with marked temporary relief. In fact they get so much benefit that they willingly return for a second or third fulguration upon recurrence. Kreutzman in the *California State Journal of Medicine*, April, 1922, reports a patient relieved of several years' pain by fulguration.

Kretschmer, Rathbun and Hyman (personal communications) have used fulguration with more or less success. Their opinions and mine are almost identical, so instead of quoting each, I shall in my conclusions, consolidate our opinions.

Technic.—To properly fulgurate these ulcers the anesthesia has to be good, either general, spinal, or sacral block.

Spinal anesthesia would be ideal except for the relatively high mortality. Under general, except when profound, the vesical reflex is not abolished, and when sufficiently deep, the respiratory excursions are embarrassing. Personally, I prefer sacral block. This gives complete and prolonged anesthesia, with an absolutely quiet bladder. The bipolar current has been used in all. Fulguration can be done through either an air or water distended bladder. With the water cystoscope the bladder capacity should be determined before anesthesia, and should not be exceeded, for troublesome bleeding will be provoked. The ulcer can best be seen through a brilliantly lighted cystoscope, and it is well to have an interchangeable observation lens to locate the ulcers in difficult cases, and to check up on the degree of fulguration.

I prefer fulgurating through a Kelly cystoscope (or some modifica-

tion), with the patient in the knee-chest posture. The patient should be taught this posture before operation as the preliminary injection of scopolamine and morphine, and the excitement of an operation may cause some difficulty in getting the proper position.

In the knee-breast posture the active electrode should be in contact with the ulcer before the current is turned on. If away, there is sparking and the bladder is burned, with the development of sufficient smoke to obscure vision. When in close contact there is desiccation only.

The tendency, I believe, has been to fulgurate too lightly. I am sure that the results in the patients whom I have burned deeply and extensively, have been the most satisfactory. My practice is to burn the visible portion deeply, and one-half to one and one-half centimeters beyond, lightly.

Postoperative Course.—There is usually immediate relief of the old pain and the bladder capacity increased one to two-fold. In a few days cystitis is apt to develop, and with this marked frequency. The patient should be put on urotropin before and after fulguration to lessen or prevent infection. Should infection develop irrigations with boracic acid solution and instillations of argyrol are helpful.

In ten days to two weeks there is discharge of small amounts of slough, and perhaps some bleeding. It is four to seven weeks before the bladder lesion is completely healed.

Results.—Seven patients with Hunner ulcer have been fulgurated. Three of these had had resection of the bladder for ulcers, and the ulcer found after operation was either a new development or due to failure to resect sufficiently wide, the latter being the more probable. Since fulguration, nine to twelve months ago, they have had no recurrence of pain or ulcer.

Three patients had fulguration alone; two are free of the old ulcer pain and have normal appearing bladders; one has two small ulcers, pain at times, but on the whole is greatly benefited.

One was fulgurated through a suprapubic incision. This patient had an ulcer involving the left side of the trigonum and fundus, fully 2.5 x 3.5 cm. The operation was done in March and except for a small ulceration noted in July and persisting only a week, and a similar recurrence noted in September and disappearing within a few days following the application of the silver nitrate stick, her bladder has looked almost normal. She has felt greatly relieved, but at times has pain almost as severe as before operation.

One was fulgurated three times, three twice and three once, the best results have been in those fulgurated through the air distended bladder. I think this may be explained by the fact that the fulguration was

more thorough and that the diathermic effect extended to a greater depth.

Conclusions.—Kretschmer, Rathbun, Hyman and I concur in these: All possible foci of infection should be removed.

Resection is a formidable operation with at times spectacular and at times dismal failures.

Fulguration is a simpler method of dealing with the problem and should be tried first.

The results are frequently most gratifying. At least, temporary relief can be counted upon, and if there is recurrence the ulcer can be fulgurated again. The willingness of the patients to submit to second and third fulgurations is a convincing testament of the relief they receive.

Until something better is discovered we shall continue fulguration.

In reviewing my own results, I find that the greatest relief and best looking bladders are those in which the fulguration was the most thorough, and performed under sacral anesthesia through the air distended bladder.

With increased experience and perfecting of technic I feel we can anticipate even more satisfactory results than those already obtained.

54 EAST 48TH STREET.

(For discussion, see p. 323.)

REPORT OF A CASE OF CARCINOMA OF BASE OF APPENDIX*

BY MAGNUS A. TATE, M.D., CINCINNATI, OHIO

Mrs.—consulted me on November 6, 1922. She married 35 years ago, and had two children (both normal labors) and one miscarriage. Twenty-five years ago both ovaries were removed, probably for cystic degeneration. She had had intermittent fever, heart trouble (?), and two years ago a slight paralytic stroke involving the left arm and face. The facial paralysis gradually improved and there remains now only a slight drooping of the mouth.

Her mother died of smallpox, and father of pneumonia, no history of cancer or tuberculosis on either side of family.

The patient is now sixty-three years of age. Aside from occasional abdominal distention she was in fair health until six months ago, when there appeared an uneasiness in the lower abdomen accompanied by occasional pain. This pain became very severe and constant for the past month. Weight, which was 146 pounds six months ago, has dropped to 126. Appetite is poor; there is marked constipation with alternating diarrhea, and now and then she has passed what she thought to be clotted blood; urination is frequent but without pain. Her daughter (in a private conversation) stated that her mother is failing very fast, and that at times is so feeble that she can walk only a short distance, and is then so out of breath that they are afraid that she will fall or have another stroke. Also she has become

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

so apprehensive and nervous that she frequently bursts into tears, and for the past week has not eaten in quantity the equal of one meal.

In appearance the patient is very anemic, and waxy. Her hair is grey, thin and lusterless, eyes somewhat sunken, eyesight poor, teeth very good for a woman of her age, no enlargement of the neck, chest sounds normal, heart action irregular, rate 110, a slight murmur (probably hemic), but no valvular lesion. Pulse is feeble, blood pressure systolic 98, diastolic 58, and temperature normal. The abdomen is quite fleshy, but the rest of the body thin; entire muscular system is very flabby, and in the lower quadrant to the right of median line a pronounced mass (the size of a large fetal head) could be easily detected on palpation and without giving much pain, giving to touch a peculiar feel, doughy in spots, and at other places very hard, with a distinct flat sound on percussion, and auscultation negative.

There was a second degree perineal tear, no prolapse of the anterior or posterior wall, the usual cervical tear of a multipara, and an atrophic uterus. Nothing was detected in the lateral vaults, and vaginal secretion was negative. A few small external hemorrhoids were noted, and nothing pathologic higher up could be felt by fingers or seen by the proctoscope. The patient was sent to the hospital for further study and examination. Wassermann test was negative.

The urine was cloudy, specific gravity 1.015, faintly acid, and contained no albumen, acetone or sugar, a trace of indican and no diacetic acid. Microscopic examination showed numerous large flat epithelial cells, a great amount of mucous and no casts.

X-ray findings revealed no stones in gall-bladder; kidney normal in size, shape and position, and the urinary tract free from kink or stone. Injection test of Colon showed contour and caliber to be normal throughout, except an irregularity at tip of cecum. A marked tumor mass (outlined below the shadow of right kidney) appeared to be above cecum and in front of ascending colon.

The intestinal canal was thoroughly cleansed by repeated doses of castor oil, and on succeeding days, by many enemas. The resulting stools very large in amount, did not contain any blood, but many hard scybulous masses, much mucus and the odor was very foul. The pulse rate and blood pressure remained about the same, but the pulse volume seemed to improve.

If the ovaries had not been removed I would have pronounced the mass to be of ovarian origin, either cystic, dermoid or parovarian. The site of tumor, rather firmly fixed, made me believe that it was connected with the cecum, but the nature of the mass I was not able to state, other than I believed it to be malignant.

The patient was kept in the hospital seven days before operation, which was performed on November 14, 1922. On opening the abdomen (right rectus incision) we were somewhat astounded to find the lower abdomen apparently negative; no tumor mass was present on inspection as was expected from our physical examination and interpretation of x-ray plates. Both ovaries and tubes were absent, and the uterus was small and freely movable. On lifting up the cecum, however, its caliber was found to be markedly increased in size, thickened and flaccid, somewhat like that of a large bladder. Pulling up this flaccid portion of cecum the appendix was found to be very hard and about the size of one's first finger, three inches in length, entering at its base into a mass circular in outline, which was somewhat larger than the face of a watch. The macroscopic appearance of the circular mass, and base of appendix was that of malignancy, and a few large glands in and around the cecum were also noted. The location of this carcinomatous mass was to the side of the cecum, involving the lower third of the appendix, interfering with the normal passage of fecal contents and gas, which gives an explanation of the presence of the tumor mass as found on repeated palpation, and

shown on x-ray plates. The apparent disappearance of this tumor mass (as noted on opening abdomen) was the result of the cleansing of entire intestinal canal during the preoperative hospital stay.

The question at this time was (considering the patient's physical condition) how the case should be handled from the surgical standpoint, and three methods suggested themselves to me. First, a removal of the entire cecum, part if not all of the ascending colon, and about six inches of ileum, followed by an anastomosis of the ileum to the transverse colon, which would have been ideal and logical under ordinary circumstances. It seemed to me, however, that any extensive operation at this time could have only one outcome, namely death on the table, or at best within a day or two.

Second, to close the abdomen without attempting any surgical relief, and a third procedure, which I adopted, was as follows: A circular incision was made around the growth, removing the entire mass, and a goodly portion of the flaccid walls of the cecum. The line of circular incision was freely cauterized, the seared edges were brought together, taking up the slack of cecum, and leaving the entrance from the cecum into the ileum apparently free. The abdomen was rapidly closed without drainage. The specimen was found to be an adenocarcinoma.

The succeeding four days were very anxious ones, as the patient's general condition was one of profound shock and collapse, but from the fifth day on a constant but slow improvement noted, and she left the hospital in four weeks from the day of operation stronger and in better physical condition than she had been for the past six months. One month later she was referred for deep x-ray therapy, and has now received eight treatments.

It is naturally too soon to make any prognosis whether or not the disease was partially or wholly eradicated at operation, or whether the deep x-ray infiltration has been of material benefit, but the patient seems to be making slow progress, eats and sleeps fairly well, has daily bowel movements which are painless, is up and about the house, takes short walks, and now and then an automobile ride. She, however, complains of an uneasiness in the right side, is extremely nervous, but up to present time no tumor mass can be detected on palpation.

(For discussion, see p. 325.)

MATERNAL MORBIDITY AND MORTALITY IN THE UNITED STATES*

BY GEORGE CLARK MOSHER, M.D., KANSAS CITY, MISSOURI

IT is the individual who dies; there is no mass mortality in obstetrics until the records are filed.

The reiteration of statistics, in reference to facts with which we are all familiar, is wearisome and time consuming. The sins of omission and commission of all figures, which could be presented relative to maternal morbidity and mortality, are included in three sentences:

Maternal morbidity and mortality have not been reduced in the United States in the last twenty years; according to the census reports, 16,000 women die in labor annually.

In the loss of mothers, the United States stands fourteenth among the so-called civilized nations, only Spain and Belgium having a higher death rate.

Puerperal septicemia and eclampsia claim over one-half of all the patients who die. Oliver Wendell Holmes, in 1845, pronounced child-bed fever "a private pestilence," and showed that it is preventable. Joseph B. DeLee, in 1923, gives records of 40,000 cases of labor in the Chicago Lying-In Hospital without a death from eclampsia.

The questionnaire of the Committee on Maternal Welfare of this Association, which was sent to every section of the country, contained a request for the views of our correspondents regarding the causes of maternal morbidity and mortality, and for suggestions as to possible remedies for their improvement. Valuable expressions of opinion were received, which could not be embodied in the Committee's report for want of space. So, when our Secretary, Dr. James E. Davis, wrote requesting a paper on this subject, the assignment was considered opportune.

To paraphrase the famous question of one of our midwestern literary lights, "What is the matter with obstetrics?" The letters received are so much in accord concerning the reasons for the opprobrium of obstetrics, that extracts from these furnish a comprehensive answer.

Since we are meeting in the great medical center redolent of the memories of Hodge and Meigs and Theophilus Parvin, it seems fitting to have the opinion of one of the present generation upon whose shoulders the mantle of those great teachers has fallen, Dr. Edward P. Davis, who writes in part:

*Read at the Thirty-sixth Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, Pa., September 19-21, 1923.

"In Philadelphia and vicinity, as far as I can observe, the condition of obstetric practice is essentially as follows: The rich obtain excellent medical care during pregnancy, parturition and recovery from labor. More of them go to hospitals for confinement than formerly. The interruption of pregnancy, accidents in labor, and bad recoveries, are more the result of dissipation, luxury and degeneration among these people than a lack of proper obstetric attention.

"The poor obtain excellent obstetric care if they enter hospitals. They have better attention than formerly in dispensaries, where a good deal of publicity is given to prenatal, so-called, care. . . . Obstetric care is probably conducted among the poor with greater success than among any others, because they can be taken to a hospital more readily and are under better control. This results in the saving of lives, sometimes of doubtful value to the community. It does, however, secure a positive gain to the population by maintaining the health and working power of mothers, and by keeping the families together and helping the artisan in his domestic fortune.

"The population most in need of good obstetric care is the so-called middle class, with small and limited incomes but with sufficient intelligence, education and refinement to desire and appreciate good medical attention and privacy during illness. Such cannot afford expensive private rooms in hospitals nor the services of specialists, nor can they have high priced trained nurses. Our large hospitals lack greatly moderate priced accommodations for such patients. They are apt to consult general practitioners who undertake confinements in apartments or private houses, without proper facilities, with more or less bad results as regards the health and strength of the mother and child.

"On the side of the medical profession, the middle class medical man, or general practitioner, so-called, is the greatest danger in obstetrics. A midwife, under strict control, does comparatively little harm, but the doctor who does obstetric work to get the medical practice of the family, giving as little time and attention as possible, because it pays but little, is the one responsible for many obstetric disasters. . . . From the standpoint of the medical profession, it must be remembered that the struggle for existence is a bitter one. The doctor must take all he can get and do with it his best. He does not dare refuse obstetric operations because his competitors do them, and yet he cannot do them well. . . .

"On the side of the medical profession obstetrics must be considered a speciality of equal importance with surgery. Gynecology is naturally a department of surgery, and as obstetrics improves, the field of gynecology becomes a narrow one. The fact that large fees have been obtained by gynecological operations, and comparatively small fees are obtained in obstetric practice has resulted in the disproportionate importance placed upon gynecology."

Another teacher and leader, Dr. Franklin S. Newell of Harvard, says, among other things: "I would say that conditions in Boston are not perfectly satisfactory, owing largely to the fact, in my opinion, that a considerable proportion of the obstetric consultation in the surrounding towns and cities is done by the younger surgeons who have had no obstetric training, and whose one idea in delivery is to do a cesarean section, irrespective of the conditions present, and the needs of the individual patient.

"Also, that it is very difficult to educate the older general practitioner to the advantages of prenatal care, but we can impress our younger men. Prenatal care is so comparatively recent that the general practitioner of over forty-five pays little or no attention to it."

From the far south, Dr. C. R. Hannah, Professor of Obstetrics in Baylor University, Dallas, Texas, writes: "Too many of our medical men who do obstetrics

fail to comprehend and put into practice that which they know. Morbidity and mortality of mothers could be lowered if specialists in obstetrics were more frequently called. Surgeons are more often called than obstetricians. The lack of knowledge of obstetrics on the surgeon's part frequently leads to operations, rather than methods of obstetric procedure."

Dr. John E. Talbot, Worcester, Massachusetts, says in part: "I believe the public needs education on the value of good obstetric care. At present it is the least appreciated branch of medicine, even among the educated class. The fault of this situation is due partly to historical reasons, but mainly to the medical profession itself. The public has been educated to require special postgraduate training of the surgical and medical men it employs, and is willing to pay fees commensurate with such special training. In obstetrics, however, the medical school graduate, with experience in only six to twenty cases is expected to handle all the complications and operative procedures in obstetrics. The fees which the public expects to pay are in keeping with the low grade service which is given them under these conditions. . . . It seems to me that hospital experience is as essential to the proper practice of obstetrics as it is to the practice of surgery. I do not believe that the importance of proper obstetrical training is appreciated by the profession itself, outside of the list of those who are obstetrical specialists."

It has long been the popular opinion, in medical circles, that the midwife is answerable for the large percentage of maternal deaths, especially from sepsis.

Dr. Julius Levy, of the Bureau of Child Hygiene, Newark, New Jersey, published in the February, 1923, issue of the *American Journal of Health*, a paper, in which he discusses the comparative responsibility of physicians and midwives as to maternal mortality, and gives a new angle to this tradition, presenting tables and charts setting forth his observations. He shows that in the fifteen largest cities, except only Pittsburgh, there has been a decrease in the number of cases reported by midwives, and of midwives reporting cases; there has been no decrease, rather an upward tendency, in maternal mortality; the centers having the largest percentage of midwives have the smallest percentage of maternal deaths.

Dr. A. M. Mendenhall, Indianapolis, University of Indiana Medical School, commenting on Dr. Levy's paper, writes:

"As a result or rather an intensive investigation, I find that in Indiana, as a whole, the midwife is not a very considerable problem, there being only one locality, a group of four counties near Chicago, where the midwife is much of a factor. In these counties nearly one-half of the women are delivered by midwives, with maternal and fetal deaths considerably better than the State as a whole, especially there being less puerperal sepsis."

In a personal letter Dr. Levy says: "I am not holding a brief for the midwife, but feel very strongly that no progress will be made until we, as physicians, are willing to accept the facts, and then try to develop methods that will correct conditions. . . . If you read my article closely, you will notice that I have been very careful not to use my figures to prove that the results from available data are no worse, even after we make allowance for the fact that their cases are foreign born mothers, who present a higher proportion of multipara and a smaller proportion of risk than our American born mothers."

The inevitable conclusion to be drawn from these expressions of opinion, which typify the feelings of a large number of the thoughtful and progressive leaders of the profession, may be summarized in the comprehensive statement that much of the responsibility for the untoward results of childbirth rests within our own ranks.

The rapid decrease in the number of midwives in practice; the more drastic supervision by Departments of Health over them in the regions where they are still popular, or indispensable because of the lack of physicians; the realization that their work, among the part of the population whom they serve, shows no higher percentage of bad results than the general average of the community; these considerations eliminate the midwife as a factor to be reckoned with in the solution of the question of the continued high rate of maternal mortality.

In the towns and rural districts, and very largely in the cities, the family physician, owing to tradition, sentiment, self-interest or convenience, will care for childbirth, and the average result of his work will represent the status from which statistics will be drawn.

This work will continue to be conducted in the home. The great majority of women who are serving to perpetuate the best elements of the human race belong to the class of intelligent, self-respecting families who are dependent on salaries or weekly wages.

The disproportionately small amount of space allotted to the wards of our hospitals, the high price of the rooms and the general coincident expense makes any but charity hospital service prohibitive to this class of women. Special nurses are equally prohibitive. Obviously home confinements involve much greater risk.

The causes operating to lower the standard of the work of the general practitioner have already been suggested. They may be summarized as follows: insufficient training in our medical schools; lack of hospital postgraduate training which will enable the physician, at least, to diagnose abnormal positions; lack of appreciation of the fact that the process of labor is not surgical; lack of dependence on the obstetric specialist for diagnostic counsel rather than on the young surgeon whose obstetrical experience and preparation may be even less extensive than his own.

It is the part of those of the profession who are fitted by education, by training and by experience to take the lead in instituting a program that will remedy these conditions, and thus raise the standard of the work of the general practitioner.

Obstetrics should be made a speciality of the same rank as surgery. As many hours of the college curriculum should be given to the drilling of the medical student in the principles of the one as of the other. In a larger degree he needs a familiar knowledge of the art of obstetrics, because, regardless of his training, he will, on entering practice be called upon to attend women in labor, long before he will be called to

do operative surgery. He hesitates to call counsel in labor regardless of the condition of the patient, because of the possible reflection on his ability. Without question he can call counsel in a surgical case without affecting his professional dignity because surgery has always, with the laity, been considered the part of the specialist. Not infrequently, when counsel is called, the young practitioner yields his own judgment of the need of obstetrical assistance to the demand of the family for the only generally known specialist, and summons the aid of the surgeon.

Several years ago Dr. J. Whitridge Williams wrote a paper on the teaching of obstetrics, in which some scathing comments were made on the methods which were then employed. There has been some improvement since 1910, but even today, with the enormous shrinking in the number of medical schools, and the practical elimination of privately owned medical colleges, the demand for competent instructors in obstetrics is great, while the quality of teaching is woefully inadequate.

In no other branch of medicine is there so much chaotic difference of viewpoint as in obstetrics; nor is there elsewhere such exhibition of diversified technic as there is in the management of labor. A recent editorial in the *Journal of the American Medical Association*, commenting on this radical divergence of opinion and its disastrous consequences, sums up the subject by maintaining that in obstetrics, individualization is absolutely the key word.

Among ourselves, as specialists, individualization is possible and desirable. Individualization, however, will not solve the problem for the general practitioner. He must be satisfied with a generalization of the minimum standard of obstetric management.

Certain procedures are now recognized as a part of the routine technic of good obstetrics, that a decade ago were certainly individual, especially those relating to diagnosis and asepsis. The general practitioner, who, as a medical student, failed to acquire the fundamentals of obstetrics, or if he acquired them, fails to apply them, accepts his morbidity and mortality as inevitable because he is callous to their significance.

If every general practitioner, nay, if every man who undertakes the care of a maternity case, could be compelled to take a short postgraduate course every five years, induced to occasionally attend one of the clinics now being held annually in many of the large centers, and be urged meantime to read the standard medical journals, the result would be quickly appreciable upon the statistics of maternal morbidity and mortality. These have been so long stationary that they seem, as it were, to have become a permanent reproach to the doctors of this country.

THE RENAISSANCE OF ABDOMINAL SURGERY; THE PASSING OF THE GYNECOLOGIST*

By JOHN B. DEEVER, M.D., PHILADELPHIA, PENN.

IT is commonly recognized that abdominal surgery and gynecology, as we know it today, owes its renaissance to the introduction of ether and more particularly to the development of aseptic methods of operation, and that with the conquering of pain, hemorrhage and infection, the three great evils which for so many centuries retarded surgical progress, the pathway was opened for the development of modern surgery. But even the most enthusiastic abdominal surgeon gladly recognizes the fact that the surgery of the upper abdomen owes its rise to the fearless and ingenious work of the early gynecologists.

There is perhaps no more dramatic era in surgical annals than that which marks the beginning of gynecologic surgery. The story of that bleak day in December, 1809, when a woman "with her pendulous abdomen resting on the pommel of her saddle" rode sixty miles into Danville, Kentucky, to seek relief for an ovarian tumor that was sapping her strength, reads almost like a work of fiction. She did not come in vain, for she found in Ephraim McDowell a man with the courage of his convictions and willing to suffer bitter and hostile criticism for his temerity in attempting to extirpate the ovarian growth by surgical removal of the ovary itself. This same fearlessness characterized those who came after McDowell. The efforts of his followers, Smith, Peaslee, the Atlees, Dunlap and others to create a legitimate place in surgery for the operation of ovariectomy reads like the strangest story of perverted persecution of men, branded as butchers and murderers, those whose sole object was the relief of suffering womankind.

To these pioneers we owe our everlasting gratitude. Surgical principles and operative procedures which they laid down are accepted today unaltered. Many methods of investigation are the outcome of those which they evolved, and strategy which they employed is still and probably always will be effective.

In the decade that followed these pioneer days it was only in the field of gynecology that abdominal surgery was at all active. With these times are intimately associated the names of Sims and his ingenious treatment of vesicovaginal fistulas; of the elder Emmett and

*Read by invitation before the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Philadelphia, September 19-21, 1923.

his plastic repair of the lacerated cervix; of Warren and his plastic perineal surgery; of Dudley and others in the development of the reduplication of the round ligaments for the correction of the retroverted uterus, etc. While all these endeavors mark the rise of gynecology as a specialty, as distinguished from general surgery, they also hail the advent of the surgery of the upper abdomen as distinguished from pelvic surgery. Stimulated by the fearlessness that characterized the early gynecologic surgeons and encouraged by their triumphant overthrow of prejudice, and what is most important, armed with the panoply of anesthesia and antisepsis, abdominal surgery began its slow and gradual march to its present-day perfection.

There is one very good reason why gynecology should have been the earliest specialty in abdominal surgery. It is no doubt due to the fact that the operative field is superficial and the parts present a greater amount of natural resistance and were more easily drained, so that the risk of operation was not so great as in surgery of the upper abdomen. It is only natural, therefore, that the surgeon of largest experience was to be found among the gynecologists *per se*.

There are one or two commanding figures of the times that can be mentioned without in any way detracting from the glory of that array of lesser lights to whom surgery owes an inestimable debt. In speaking of the renaissance of abdominal surgery one's thoughts naturally revert to the gigantic figure of Lawson Tait. It seems superfluous to more than mention that it was with Tait's epoch-making recognition of the true pathology of pelvic suppuration and his work on the fallopian tubes that gynecology entered into a new era of activity. A close second to this commanding figure is our own Joseph Price, well described as a "bold, rugged, brilliant surgeon," a "militant advocate of the new surgery." Like Tait, Price had to contend against the conservatism of the surgeons and teachers then in authority, and like Tait, he remained callous to criticism and opposition and with singleness of purpose tenaciously forged ahead, bending all his endeavors toward establishing the new surgery. His work was marked by simplicity and thoroughness, and it is no exaggeration to say that, even today, surgery in this country still demonstrates the influence of this master surgeon. We also recall the names of J. Marion Sims, the first to attack the gall-bladder by his drainage operation. But attractive as it may be to recount the early days and dwell on the remarkable progress of abdominal surgery, it is not this aspect of the subject that I have been asked to present at this time, but rather to discuss the effects of the renaissance of general abdominal surgery on gynecology as a specialty.

We, as general and abdominal surgeons, recognize and congratulate you upon the contributions which your predecessors have made. In

the search for truth these men have made invaluable contributions. Few of them knew or thought that the mantle of recognition would fall upon them and that their work would be a beacon light in the future. But little did they care as long as they had the personal satisfaction of having taken a step forward. There is nothing so interesting in the entire history of surgery as this tireless and relentless persistence which led to the conquering of the mysteries of the abdomen. It has meant the alleviation of the suffering of countless thousands and the restoration to perfect health of many more.

Gradually there developed an imaginary line more or less arbitrarily placed, which supposedly differentiated the abdominal from the gynecologic surgeon. The isthmus which joined the two specialties was the ileopectineal line, but years of watchful waiting have shown us that it is a false boundary. It is like taking Alsace and Lorraine from France, eventually, in the evolution of mankind, natural boundaries only are able to withstand the onslaught.

A survey of the work that is being done by those who are known in each specialty indicates quite clearly that none hesitates to invade the field of the other, and that the term abdominal surgeon may well be applied to both. While this may indicate the passing of the gynecologist *per se* it would in no way be contrary to prevalent facts, inasmuch as neither the abdominal surgeon, as we have him with us today, nor the man who claims gynecology as a specialty is practising as a specialist in the accepted sense of the term.

There is a time in every new movement when the pendulum swings to one extreme or the other. This is as true in medicine and surgery as it is in politics and religion. It is characterized by closely drawn lines, by prejudices and by selfishness. A survey of the history of the surgery of the abdomen and pelvis will show that we have just passed through such a period.

There has been, and unfortunately still is, a feeling among some gynecologists that the general surgeon should confine his activities to that region which anatomically lies above the ileopectineal line. There is thus an attempt to create specialists in a domain where specialism frankly does not exist. It is entirely analogous to a situation where an automobile mechanic would tell you he could bore your engine cylinders, but he could not replace the piston rings.

There is no actual separation between that area above and below the ileopectineal line. It is an imaginary, scarcely even a potential separation. It is true that the functions of the viscera in the two portions are not the same, but the problems encountered are closely identical and very frequently coexisting lesions are present.

How then are these to be dealt with? Should the surgeon and gynecologist always be present whenever the abdomen is opened? Even were this in harmony with modern organization and efficiency

it would perhaps be against our better judgment, for just where would the one stop and the other begin? For instance, who would remove the pelvic appendix which has its attachment in the right iliac fossa?

Because of these conflicting problems there has developed, at least among most general abdominal surgeons and gynecologists, a disregard for the supposed domain of the other, each invading whatever area demonstrated pathology regardless of his "supposed" jurisdiction. At first this occurred when operation demonstrated the presence of coexisting lesions, and it has gradually spread so that each specialty came to invade the field of the other for primary lesions. Thus both may more aptly be termed abdominal surgeons, for if the gynecologist is to forsake his birthright he must needs forsake his title also.

A condition such as I have pictured of course presages the passing of the gynecologist. It is not contrary to the facts as they exist today, since finding himself cramped in the narrow confines of the bony pelvis he has emerged into a larger and more liberal field.

In the accepted sense of the term, therefore, neither the abdominal surgeon nor the gynecologist is a specialist, and it would be fitting clearly to meet the issue and openly acknowledge that which both of us are doing by a back door method, for neither of us is devoting attention exclusively to that part of the body which we claim as our specialty.

Anatomically, as I have said, this is impossible. It is not comparable to the specialties of otology and ophthalmology, but is analogous to that of rhinology and laryngology—who would attempt to draw lines between these two?

The solution of the problem lies in openly discarding that which we have not practiced for years. Should not the so-called gynecologist be trained to deal with the lesions of the upper abdomen, just as the general abdominal surgeon should be prepared to apply his skill to pelvic lesions? Neither should have any temerity when the peritoneum is opened in attacking that which the aseptic scalpel has brought to the light of day. And when the mystery is dispelled and truth revealed, the revealer must go ahead with the same confidence of bringing the case to a successful conclusion, as if the diagnosis had been correct.

Surgery by force of circumstance must fall in line with modern accepted economics. We cannot go along groping in the past and ignoring the present. The principles and reasoning I have elaborated I believe to be sound. During this present generation we will see the refinement of the field of the specialist. The modern surgeon who enters the abdomen should know equally well the anatomy, the physiology and the pathology of all that lies within. The problem

of hemostasis, of asepsis and skill in the gentle handling of the viscera are as applicable to the upper as to the lower abdomen.

This striking change is coming regardless of our individual feelings. The patient of the future will entrust himself for operation to the abdominal surgeon who can accurately deal with any lesion he may encounter. He will not accept the greater risk imposed upon him when he accepts the so-called absolutely pelvic specialist. Unquestionably, therefore, the work of the two will converge and be replaced by the one. It does not mean a replacement of either, but a development of both, and as each becomes a craftsman in the field of the other, as they are doing today, their fields will converge and overlap and they will be merged into a homogeneous whole.

Greater progress, no doubt, is assured by the merging of specialties. As Harvey Cushing has aptly said, "When progress ceases to be made through the incentive studies which the smaller field of work permits, there is every reason why the vagrant specialty should be called back under the wing of its parent, general surgery, from which, under no circumstances, should it ever be permitted to wander too far." The time has not, and may never, come when the specialty will go back to the general surgeon, but the time has come when the abdominal surgeon because of broader experience must assume control of the situation.

It may be bold, but I see in the not distant future a realignment of surgery, and in the picture which rises before me I fail to see any one of the nomenclature of a gynecologist. Expediency in surgery, just as in all processes of evolution, demands that those only survive who are capable of dealing with that larger field which lies between the diaphragm and the levator ani.

Unfortunately, also, in our medical schools where the chairs of gynecology and obstetrics coexist there is rarely harmony and nearly always a duplication of teaching. The obstetrician has reached out for the operative side of the diseases of women. He should content himself with the process of gestation and with the normal and abnormal phenomena which occur during it. There is a serious question as to whom the plastic surgery rightly should fall, but we may say that repairs of the pelvic floor should remain with the obstetrician as long as he gives promise of productivity. However, intraabdominal lesions should be turned over to the general abdominal surgeon and the obstetrician should not be permitted to develop a complete Frauenklinik.

There would thus be developed two specialties whose lines are delineable, whose results would be more apt to be proficient, and of whom we could say they have seen the bidding of the times and have answered it.

THE SIGNIFICANCE OF OCULAR CHANGES OCCURRING IN ASSOCIATION WITH PREECLAMPTIC SYMPTOMS

BY LLOYD MILLS, M.D., F.A.C.S., LOS ANGELES, CALIFORNIA.

THE terms "eclampsia" and "toxemia of pregnancy" have been applied so loosely that, at present, they constitute another of those "diagnostic rubbish heaps" which still litter the field of medicine, but which, happily, are steadily being cleared into their exact component groups.

In the case of the terms in question it has been easy to classify headache, epigastric and colonic distress, nausea and eye symptoms as toxic, in the sense of being related to some obscure renal or hepatic dysfunction or to some disorder of blood chemistry, even in those patients having normal renal function, normal blood nitrogen, lack of hepatic enlargement or tenderness and normal eye grounds. This loose grouping, accordingly, probably has concealed other and more likely origins of many of the symptoms noted late in pregnancy under the common term "toxemia." Any evidence, therefore, which suggests such unsuspected origins of these disturbances may lead to a better understanding of the so-called toxemias of pregnancy, to their better classification, to new points of attack or methods of prevention and, by permitting a clear separation of the very grave from the merely distressing cases, may relieve both physician and family of the heavy burden of anxiety and uncertainty which they now carry in such cases.

This paper is not concerned with the question of frank eclampsia, other than to suggest that the cause which we assume to be the factor in these less grave conditions noted below may be contributory.

The occasional occurrence in pregnancy of changes in ocular muscle balance, in refraction and of those retinal changes usually called "neuroretinitis," is well recognized. It is not generally known, however, that apart from the changes mentioned, the eyes are directly concerned in nearly 90 per cent of all cases of pregnancy, that this concern is a very active one in 40 per cent of this large group, and that the relation is not altogether free from pathologic consequences.

This important involvement of the eyes comes about in consequence of the increasing pressure put upon the optic commissure and tracts by the normal hypertrophy of the pituitary gland in pregnancy. A postmortem study of this region in women who have never been pregnant, made by examining the gland *in situ* from above and also by carefully rongeur away the sella from below, shows an intimacy

of normal relation between the pituitary, and the optic commissure and tracts, which occasions surprise not that 90 per cent of eyes reflect this pressure in pregnancy, but rather that these effects do not exist in all cases without exception, and that their end results are not more generally grave and lasting.

Lecoute in 1898 first assumed that hypertrophy of the pituitary was a normal accompaniment of pregnancy. It remained for Erdheim and Stumme to demonstrate this fact in 1908. Their examination of 150 subjects disclosed that the average weight of the hypophysis in women who had never been pregnant was 6.18 grams, the maximum being 7.5. This average in primiparae was 8.47, with a maximum of 16.5. Bandler (*Endocrinology*, 1921) became authority for the statement that this hypertrophy never undergoes involution to its former ante-pregnant stage.

This enlargement of the pituitary gives reasonable grounds for the assumption of a corresponding hyperfunction, with not infrequent vagaries of overaction and of anatomic relations; it explains many of the so-called preeclamptic symptoms and makes it clear why so many of these apparently threatening cases never climax in true eclampsia.

A brief review of the anatomic situation in the region of the pituitary will explain how enlargement of this gland results in definite and measurable visual losses which may serve as indices of the degree of enlargement and from which, in time, it may come to be possible to judge, in connection with other local symptoms elsewhere in the body, both as to the existence and the degree of functional overaction of the pituitary.

The fibers from the temporal half of the right retina pass back through the temporal portion of the right optic nerve. They form the temporal portion of the right optic commissure, do not decussate and finally make up the temporal part of the right optic tract. The fibers from the left half of the left retina similarly form the temporal portions of the left optic nerve, commissure and tract. The fibers from the nasal halves of the retinae, however, are placed nasally in the corresponding optic nerves, cross in the chiasm and form the nasal halves of the opposite optic tracts. In other words, the nerve fibers which arise from the right halves of the two retinae form the right optic tract and those from the left halves for the left optic tract. Hence, the path of perception of all objects situated to the right of the median line comes by way of the left optic tract, and that to the left of the median line by way of the right optic tract. The pressure of a tumor mass, either in front of the chiasm or, as in the subject under consideration, behind the chiasm, appears, therefore, in a plot of the fields of vision, as more or less symmetrical defects

in both temporal fields, the temporal fields corresponding to the nasal halves of the retinae.

The optic chiasm lies over the center of the sella, though not in contact with its anterior border, and may be pressed upon from below and behind by an enlarged hypophysis when this reaches a volume of at least 0.5 c.c. The size of the gland, as well as those anatomic peculiarities which favor or hinder compression of the nerve, such as the shape of the sella and the form and position of the adjacent dural folds and reflections, determine the differences in the type and degree of the defects in the visual field and probably are factors in the production or lack of headache late in pregnancy. These defects of the visual fields are seldom exactly symmetrical.

The first recorded changes of visual fields in pregnancy were published by Bellizona and Tridonani (*Boll. di Soc. med. and chir. di Pavia*, 1903) and were later confirmed by Forti (*Arch. di Ottal.*, Feb., 1910). They were attributed at that time to vasomotor changes similar to those which occur in hysteria. No systemic studies of the matter were made, however, until Finlay of Havana took up the work in 1919 (*Trans. Internat. Cong. Ophthal.*, Washington, 1922). His excellent work, which I have drawn upon freely, was corroborated by Lancaster and Carvill (*ibid*) who were studying the matter independently, and has since been checked by many others. An analysis of this work shows that changes seldom occur before the seventh month of pregnancy and that they are at their maximum at the time of parturition. Neither the age of the patient nor the number of the pregnancy seems to have any bearing upon the field changes, although this is contrary to what would have been anticipated from the autopsy findings given above. About 30 per cent of the cases show a marked contraction of the fields of vision of over 20°; 20 per cent have fields which are contracted between 20° and 10°; and 40 per cent or more show a slighter contraction ranging from 10° down to 5°, which is the minimum regarded as a definite contraction. Some observers take the extreme view, however, that every field will show some contraction if very carefully taken, and that ocular involvement occurs in 100 per cent. After parturition the immediate subsidence of the hypertrophy of the gland, corresponding apparently with pelvic involution, is represented by a corresponding enlargement of the visual fields, the rate of increase being variable and not yet fully determined in any series of cases available to date.

It is clear from the foregoing that in uncomplicated pregnancy the enlargement of the pituitary is enough merely to cause contraction of the visual fields without reducing the acuity of vision, but it is by no means uncommon for some dramatic visual defects to

occur, defects which in the more extreme cases resemble those produced by a genuine new growth of the pituitary. I saw such a case in January, 1923. Mrs. J. B. F., a primipara of forty years, who had passed through the normal delivery of a living child three and a half months previously, gave the history of the rapid contraction of the visual fields of both eyes, noted shortly before the onset of labor. The loss of vision reached its maximum about six hours after the birth and lasted, without improvement, for eight days. During this time only gross forms could be distinguished over an area of about a hand's breath temporally and below the fixation point in the right eye. Only the difference between light and dark could be distinguished with the left eye. Clearing of the vision to normal required another three weeks and was gradual at first. This patient was not hysterical in type or antecedents.

Examination showed no residual defect in visual acuity or in the visual fields. Central vision was 6/6 and Jaeger No. 1 with each eye with a small hypermetropic correction, and the entire intraocular picture was normal, save for a slight fullness and tortuosity of the retinal veins, somewhat more evident in the left fundus. The urine had never contained albumin or casts. The probable explanation of this case is that the pituitary enlargement became so marked, just at the time when the demands upon it were the greatest, that the pressure or drag upon the venous sinuses flanking the sella was enough to hinder their free outlet. This probably gave rise to a rapid edema of retinae and optic nerves of severe enough grade to add a transitory loss of nearly all central vision to the decided loss of the temporal fields, a local change secondary to retrobulbar disturbances. Any great persistence of such venous congestion would lead to permanent structural changes in the retinae, but it is doubtful if these would appear early in the course of such cases, nor should they, from the nature of their origin, be accompanied by retinal hemorrhage, exudates, real neuroretinitis and the other destructive changes noted in obvious toxemia of pregnancy and so often followed by more or less residual loss of vision.

An inquiry among my associates who limit their work to obstetrics showed that nearly every one had observed one or more cases of this sort, in which no clue to the origin of the dramatic, though transitory, visual defect had been furnished by examinations of the urine, blood and general clinical picture. Headaches, nausea, vomiting, epigastric and colonic discomfort and pain (suggested by Michael Creamer as evidence of increased intestinal peristalsis of hyperpituitary origin) had been noted in conjunction with the eye symptoms, all of which are fully explicable as results of local pituitary pressure or of general pituitary overaction.

Further evidence, leading to the same conclusions is given in a clinical report by S. G. Dabney (*Kentucky Med. Jour.*, Apr., 1922, p. 260) under the heading of "Toxaemia of Pregnancy with Eye Symptoms," a report typical of those which appear in the literature from time to time. Dabney's patient was a primipara of seven months who had noted impairment of vision when she was several months pregnant. Headaches, nausea and swelling of the ankles were prominent, but the urine was normal at all times. Vision was 20/50 and 20/70. No abnormalities of the eye grounds or visual fields were reported and no Wassermann had been made, but the case was believed, nevertheless, to be one of "optic neuritis with slight atrophy due to the toxaemia of pregnancy." The patient was delivered of a living child at term; she had no convulsions and made an uneventful recovery. The reporter stated that he had seen six similar cases, all of whom retained useful vision. In the discussion of this report each participant reported several cases in which symptoms indicating a preeclamptic state, with obvious visual defects, never climaxed in eclampsia. One reporter declared that he had seen two or three similar and alarming cases during that year but that all had recovered. In one of these a permanent visual defect was anticipated as the patient "had all the symptoms of eclampsia except convulsions." She proved to have normal vision, however, and no symptoms at all since the birth of her child.

It seems apparent that two separate conditions are being confused. The visual defect in one of these arises from its association with frank destructive changes in the retinae and optic nerves, in common with similar degenerative changes in the liver, kidneys and elsewhere in the body, the condition generally recognized as toxemia of pregnancy. In the other form, the ocular disturbance arises out of more or less decided contraction of the visual fields from marked pressure of the pituitary upon the optic nerves, chiasm and tracts, with the secondary effect upon central vision of retinal venous stasis. In the first form the headache, nausea and vomiting may be of toxic origin alone, or in combination with the effects of hyperpituitarism; in the second form they are the effects of a physiologic tumor and of its excessive function. Differentiation naturally is of first importance, and is made largely by examination of the eye grounds and visual fields, urine and blood chemistry in every case of pregnancy complaining of eye symptoms.

Not all of these cases recover without defects. Persistent bitemporal hemianopsia, partial optic atrophy and optic neuritis have been reported as the direct result of the pressure of pituitary overgrowth and it is well known, of course, that any extensive series of cases of toxic neuroretinitis will yield its quota of cases having grave and

permanent losses of vision. The defects noted above as following pituitary enlargement probably represent the final atrophic changes resulting from this pressure, but in a given case it is conceivable that the physiologic new growth has been the starting point for cystic or adenomatous changes in patients already predisposed, or quiescent or incipient pathology may have been lighted up.

Much work is needed to fully establish the facts which are suggested above but the work is not complicated. The continued relation of headache to changes in the visual fields and eye grounds in a series of cases will give impressive evidence; a study of visual fields in all patients presumed to be eclamptic will add still more weight; the coexistence or absence of renal changes in a series of cases showing much contraction of the visual fields must be observed and may yield important findings; the frequency of association between defects of the visual fields and epigastric and colonic distress, and nausea and vomiting, must be noted and a clinical study of the use of a possible opponent of the pituitary suggests itself in those cases where a decided involvement of the visual fields, associated with pressure symptoms of headache and nausea, occurs with little or no retinal change and normal renal function.

This work is offered in the hope that a closer study by obstetricians and ophthalmologists may lead, as it should, to a solution of these problems.

SUMMARY AND CONCLUSIONS

1. The eyes are involved in more than 90 per cent of all cases of pregnancy as a result of the physiologic enlargement of the pituitary gland, which causes different degrees of contraction of the visual fields by pressure upon the optic commissure and tracts. In the more marked cases more or less retinal venous stasis probably arises from the same origin.

2. A temporary but decided loss of central as well as temporal vision, amounting to practical blindness at times, has also been noted in occasional cases, heretofore classed among the toxemias of pregnancy. No gross renal, blood or obstetric pathology is found in such cases, which probably represent an acute obstructive retinal stasis and edema, or the direct effect of relatively excessive pressure upon the optic nerve system, or a combination of these factors.

3. The symptoms in these cases, hitherto assumed to be preeclamptic, of headache, nausea and vomiting, epigastric and colonic distresses, occur not seldom without renal or hepatic disturbance. It seems probable that they arise from the local intracranial pressure of the hypertrophied pituitary as well as from greatly increased pituitary function.

4. The separation of symptoms, hitherto considered to be preeclamps-

tic, into those of pituitary origin and those arising out of a genuine toxemia of pregnancy, and an accurate knowledge of the relative importance of each, will be accomplished, in a large measure, by systematic examinations of the visual fields and eye grounds of all pregnant women who suffer late in pregnancy from headache, nausea and vomiting, abdominal distress and renal or hepatic disturbance.

930 CITIZENS NATIONAL BANK BUILDING.

UTERINE SECRETION: A BRIEF INVESTIGATION OF ITS NATURE IN THE HUMAN BEING*

BY ISIDOR KROSS, M.D., NEW YORK

UNDER normal conditions, all bleeding is followed by coagulation after a definite normal interval of time. The factor of primary importance in this phenomenon is the formation of a blood clot at that portion of the vessel where the loss of continuity has occurred. This, in fact, is nature's method of controlling hemorrhage and, with one exception, is a universal phenomenon under normal conditions. This exception concerns the bleeding that occurs periodically from the uterus, in other words, menstruation.

While much work has been done with a view towards elucidating the factors underlying the causes of incoagulability of menstrual blood, and while considerable information has been obtained regarding the properties of the catamenial fluid, we still do not know precisely what it is that is responsible for this unique phenomenon.

The old idea of considering the alkaline mucus as the underlying factor has long been discarded, since it has been found that a mixture of blood and alkaline mucus undergoes coagulation much more rapidly than blood itself. In a thorough investigation of this subject, Blair Bell¹ came to the conclusion that it was the lack of fibrin ferment that was responsible for the failure of menstrual blood to coagulate. In another communication, he studied a series of hematocolpos fluids and found that the absence of fibrin ferment and fibrinogen were responsible for the failure of this fluid to coagulate. This investigator also performed several experiments with extracts made from the endometrium and from the whole uterus. On testing the effects of these extracts upon the coagulation of blood, he found that they had no anticoagulative powers. These findings are in direct opposition to those of Schickele,² who found that the extracts of uterine tissue, obtained under high pressure, do prevent the coagulation of blood.

*Read at a meeting of the Section on Obstetrics and Gynecology, New York Academy of Medicine, October 23, 1923.

Somewhat along the lines of Blair Bell's theory, may be considered the work of Cristea and Denk.³ These authors determined the coagulation time of the general circulating blood in menstruating women and found it to be within the normal limits. This they proved definitely, and showed that the contradictory findings of Birnbaum and Osten⁴ were due to the employment of faulty methods. On further study, Cristea and Denk found that the calcium determinations were also within the normal limits. Thereupon these authors reasonably concluded that the cause for noncoagulation of menstrual blood must be found within the uterus itself. In the next step of their investigation, they punctured the cervix uteri during menstruation and noted that the blood thus obtained differed in no way from that in the general circulation. This brought them to the conclusion that the solution to the problem was to be sought in the uterine mucosa itself. They formulated a working hypothesis that either the uterine mucosa produced some substance that was an anticoagulant, or that it abstracted from the general circulating blood during its passage through the endometrium some product that was essential to the process of coagulation. They reasoned that if the former were true, a mixture of menstrual and of normal bloods should remain unclotted. This was put to the test and they found, however, that the mixture did coagulate and at that much more rapidly than the normal blood. They also found that an emulsion of uterine mucosa mixed with normal blood clotted more rapidly than the blood itself. This latter finding is in line with that of Blair Bell, and similar to that obtained by Kross,⁵ but is directly opposed to those obtained by Schickele.² From these results, Cristea and Denk concluded that the uterine mucosa, during menstruation, did not produce any substance that prevented coagulation. This left them with their second postulate, that the uterine mucosa abstracts or neutralizes one of the substances essential in the process of coagulation, and as they found no deficiency in calcium or in thrombokinase, they concluded that the noncoagulation of menstrual blood was due to a deficiency in the fibrin ferment or in one of its forerunners, as a result of its abstraction or neutralization by the mucosa.

Dienst,⁶ who also investigated this problem, found that fibrinogen in the menstrual blood was normal in quantity and at times even in excess of the normal. He also found fibrin ferment in the menstrual blood. The quantity of fibrin ferment in relation to the quantity of fibrinogen was not however sufficient to bring about coagulation. Howell⁷ showed that one part of fibrin ferment can coagulate a maximum of two hundred and fifteen parts of fibrinogen. This author took uterine mucosa, freed it from its blood contents and made an extract therefrom. On mixing this mucous membrane extract with

normal blood, coagulation was prevented and the author concluded that this result was due to the presence of an antithrombin, and on this basis maintained that the incoagulability of menstrual blood was due to the presence of an excess of antithrombin.

In a recent publication,⁵ I showed that the uterine secretion in the rat was able to increase, to a marked degree, the coagulation period of blood taken from rats, guinea pigs and man. In addition to this property, the mixture of uterine secretion and blood after its coagulation, became fluid, as a result of a fibrinolytic ferment present in the uterine secretion. The findings of the above quoted experimental investigation of uterine secretion in the rat taken in conjunction with the phenomenon of menstruation, seemed to point to the solution of the problem of the incoagulability of menstrual blood.

It is fair to assume that the menstrual blood is mixed with the uterine secretion as it passes through the endometrium, and that the uterine secretion interferes with coagulation by delaying it sufficiently to allow the fibrinolytic ferment to dissolve any of the small clots that

TABLE I

NATURE OF AILMENT	COAGULATION TIME OF BLOOD	COAGULATION TIME OF MIXTURE	CHARACTER OF MIXTURE CLOT	RESULT OF INCUBATION
Incomplete abortion	3 minutes	15 minutes	Soft and jelly-like	Completely fluidified
Fibromyoma uteri	3 minutes	9 minutes	"	Almost complete solution
Cystocele	5 minutes	10 minutes	"	"
Ureterovaginal fistula	4 minutes	7 minutes	"	"
Diseased adnexa	6 minutes	9 minutes	"	"
Imperforate hymen	3 minutes	10 minutes	"	Completely fluidified

may form. This corresponds with the clinical observations of Beckwith Whitehouse.⁸

In order to prove that there exists in the human being a uterine secretion similar to that found in the rat, the author employed the hematocolpos fluid obtained from one of the patients in the gynecological ward of the Mount Sinai Hospital. The patient, T. W., aged sixteen, presented the typical picture of an imperforate bulging hymen with a history of amenorrhea and periodic monthly attacks of pain in the lower abdomen for a year. The hymen was incised under aseptic precautions and the thick tarry accumulation of old menstrual blood was carefully saved. About ten cubic centimeters of this fluid were mixed with an equal quantity of blood taken from the median vein of other patients. A control specimen of unmixed blood was also taken in every instance. The hematocolpos fluid was in this way tested with the blood of seven other individuals. As can be seen from Table

I, in every instance there was a marked increase in the coagulation period. The nature of the clot formed by the mixture of the two bloods differed very distinctly from that formed by the control blood. In the former, the blood clot was much softer and much more jelly-like. The tubes containing the mixed bloods and those containing the control bloods were now placed in the incubator. After a period of time varying from one-half to four hours, it was noted that the clot formed in the mixture became softer, and finally in four instances became completely fluidified. In the other three instances, the fluidification was almost complete and the residual clot very small and extremely soft. The clots in the control tubes, on the contrary, became progressively harder and showed absolutely no tendency towards fluidification.

From these results, it is fair to state that the hematocolpos fluid is thoroughly mixed with uterine secretion that contains a fibrinolytic ferment similar to that present in the rat, and that its fluid nature is due to the action of this ferment. Similarly it can be stated that in the normal individual, the menstrual blood is fluid and that it does not clot subsequent to its escape from the uterus and vagina, as a result of the activity of this ferment. Where the menstrual fluid is composed of more or less clotted blood in an individual whose internal genitalia are not the seat of abnormal anatomic changes, it seems proper to conclude that in that case there is a deficiency of this fibrinolytic or thrombolytic ferment.

(In a personal communication, Dr. S. H. Geist informs me that in a similar unpublished series of experiments, he tested the menstrual fluid for liquefying bacteria and found that there were no such bacteria present.)

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20 WEST FIFTIETH STREET.

MATERNAL AND INFANT WELFARE WITHOUT GOVERNMENT BUREAUCRACY*

BY W. D. CHAPMAN, M.D., SILVIS, ILL.

THE two subjects linked in the title, which I have been asked to discuss, are so widely separated that it has been difficult to consider them jointly. A search has failed to reveal any factor common to individual health and normal functions of government. The function of government is the exercise of those powers and the fulfillment of those duties which protect citizens in their property and family rights and in peaceful pursuits, and also to provide a business office for the transaction of international affairs.

The protection of citizens in their right to their own involves the exercise of police power for the restraint of public offenders, and under this head has come to be classed the temporary curtailment of certain activities in the emergency of contagious disease. This right of quarantine for the public protection is admitted to be just and necessary, but is so only through the duration of the emergency. The necessary exercise of police power is recognized as an emergency right and is held in sharp contradistinction to the necessary conservatism of normal living, with its great tolerance of harmless foible and individual opinion.

Tolerance of all which affects the individual alone is the essence of good government. Intolerance, either religious, moral, political, or social is the rock on which lies the wreck of many fallen governments. To any who would claim that individual health is a national right I make flat denial and refer to the government of Sparta, which fell. Pressed by a great need, the government of Sparta usurped the right to make men, and that state made men of super quality, with a ruthless efficiency which makes the present day Russian system credited to Madame Kollantai seem puerile. The denial of the family as the unit of government wrecked Sparta and furnished warning *par excellence* for all who would invade the sanctity of family practice with breeders' manuals and police compulsion.

The Constitution of the government under which we prosper was conceived in tolerance, and protects the people of the United States against bureaucratic centralization of power save only through the subsidy of state legislatures.

Such a subsidy has been attempted in recent years in numerous lines of endeavor.

*Read at the Fifty-fourth Annual Meeting of the American Medical Editors' Association, Chicago, Ill., October 26, 1923.

The fallacy of Federal Aid plans involving the distribution of cash to the several states in exchange for patronage and weakened sovereignty, lies in the assumption that cash money is an inherent possession of government. The assumption is in error and the moneys of the National Treasury do come from the surplus funds of individual citizens after paying their own current expenses of food, shelter, health maintenance, and recreation. That any part of these individual surplus funds, achieved in thrift, should be appropriated to the personal expenses of other individuals, not legitimate paupers, is out of equity. Also, it is extragovernmental, unless it be conceded that the individual person is government property. Such a concession is denied in theory and in fact by our particular government.

Maternal welfare and infant welfare, then, rest as private incidents of family life now and for the future, and demand consideration and handling by those whom normal duty nominates; husbands, wives, parents and the health advisors of their choice, rather than by volunteer fixers who offer advice to the point of proposed compulsion, without constructive effort in the raising of families and with only theoretical, as against practical, knowledge and with only vaporous generalized advice as against concrete demand and detailed experience.

The medical profession of America has the record of the health experience of the world for some twenty-three hundred years. To spread this record for the instruction and guidance of those in need is its privilege and duty. To those who feel their own competence to procure and interpret that record and to work through without expert advice, the members of the profession should extend charitable humor and nothing different. From incompetent advice vociferously offered by charlatans or demagogues or uplifters-for-pay or their dupes, the profession which knows history and is expert should protect those who look to its members for advice.

Maternal and infant welfare collectively, is the sum total of that welfare individually. Individually, it is a matter of judicious management by one best qualified to advise, chosen from among those available.

It is generally admitted that the members of the medical profession are best qualified to advise, and our various groups of social thinkers admit and claim that they can accomplish nothing without the aid of the medical profession. And so, to that profession again accrues a responsibility to which it has long been accustomed, but with this difference: a comprehensive examination of a large class of citizens of military age about 1918 revealed to the public gaze physical defects long deplored and a source of concern to medical men. Many of these defects were congenital and lent color to a claim in no wise new that the medical profession was failing in its prenatal and post-

natal care of infants. An alternative dictum that the sins of the fathers shall be visited on the sons was uneasy to believe and difficult to explain and generally unwelcome.

A postwar hysteria lent ready sentiment and ready money to the clamor of uplifters-for-pay who draw their salaries from the open pocketbooks of altruistic people.

A group of Bolsheviks, persistently patient in their efforts to abolish democracy in this country through the medium of wrecking our dual form of government and substituting an unbearable centralized bureaucracy, seized a moment of hysteria and a subject of sentiment for their greatest effort at establishing precedent, and furnished the political acumen necessary for the passage of a Federal Maternity Act, whose only function is to subsidize state legislatures and confirm a bad precedent.

These three circumstances operating jointly have evolved a situation in which a befuddled public, realizing its helplessness, is now turning to a bewildered profession groping for its accustomed authority, with a demand for the magic panacea which will relieve all ills. A profession sick with lay boards of control, and lay educational foundations, and lay legislation, and a lost sense of proportion in its handling of patients is ill-conditioned to answer until both shall have purged themselves of erroneous ideas as to capabilities and limitations.

It has seemed to me that the key to the answer lies in a statement that no social thinker, no group worker, no idealist, no optimist has yet evolved a magic scheme whereby maternal and infant well-being can be evoked for all and sundry, the fit and the unfit, by the idiotic expedient of making a law.

Omitting for the moment a discussion of heredity and environment, maternal and infant welfare depend upon two things: the practice of general hygiene and the practice of medicine. Each of those things is an individual practice contingent upon the willingness, the judgment, and the ability of patient and practitioner.

For the patient, otherwise known as the public, neither intelligence nor willingness nor understanding, is to be achieved by bureaucratic order nor government edict. Her receptivity is fixed by the past experiences of herself and her forbears. For the practitioner, neither understanding nor judgment nor ability is to be had in that manner.

Willingness to accept care, and understanding cooperation by the patient are to be had in one way and, I believe, in one way only. That is, by permitting her to feel confidence in the good faith, the judgment, the human understanding and the technical ability of him who would advise.

There is a characteristic of public and private living so pronounced that it may be postulated thus: Where confidence is deserved con-

fidence will be reposed; and in this manner we are led to introspection.

Obstetric practice will continue to be done chiefly in the home and the small hospital. The results obtained and the confidence deserved will continue to depend chiefly upon the individual attributes, technical and ethical, of private practitioners. Granting that the medical profession of other generations has received full measure of the confidence of its public, practitioners of the present generation are entitled to no single rose from the bouquets of our deserving fathers. Either we earn and receive confidence, or we neglect and do not receive. Associated Press dispatches of October 19th last, carried an announcement that the Panel Doctors' Union of England had threatened to strike if further reductions were made in the wages of its members. No more repulsive comment can be made on the decline and fall of an honored profession. Are we in America business men whose business may at any moment be taken over and run by more astute business men? Are we craftsmen whose wages may be fixed by the economic conceptions of insurance companies or lay bureaus? Or, are we devotees of a profession above and apart from business and wages? Plainly, we are a combination of all three. Insofar as the first two dominate the third in the lives and work of individual practitioners, by just so much will the confidence of women in maternity, like that of all other patients, be withheld or withdrawn, and by so much will maternal and infant welfare suffer.

With the waning of the hysteria which we have seen, the public has now turned to the doctor with two questions: "What was it about?" and "What shall we do now?" And upon our answer depends the future trend of popular opinion and action. To inspire confidence our answer must ring true and introspection must be frank, for no amount of public proclaiming will ever make us appear other than as we are.

More responsible than all else for the situation which confronts us seems to have been the unassimilably rapid succession of minor modern scientific discoveries.

In the practice of medicine science and art are strangely commingled, and the rapid rate of progress with its effort at understanding new truths has riveted the attention of the profession much to the detriment of the art of practice. This laudable endeavor to understand and keep pace has resulted in the grievous error of unseating practitioners of medicine from the teaching staffs of medical colleges to make place for scientific investigators and technical instructors, much of whose work would better have been kept beyond the sight of novices in training for the art of practice. This error could never have been made by the profession alone, but was made possible by lay foundation contributions which in return demanded lay domina-

tion as a right. Being dominated, the medical profession has cringed and surrendered its independence of thought and action.

A sentimental rather than practical public has shaped courses for a well-meaning profession to the point where one of the hardest lessons for army surgeons from civilian life to learn was that the care of the incapacitated was a minor incident, entirely beside the normal function of an army. So in normal civil life we are coming to forget that general utility rather than scientific exactness of function is the end and aim of living.

This is not as it should be and has resulted in overhospitalization at exorbitant expense, and in specialization by men without general understanding and by excesses in the field of group practice, all for the sake of the overuse of instruments of precision as against the laborious training and use of the five special senses.

The public resents this occurrence and fails to understand how it came about and wants and will have a general practitioner who, in public, stresses the homely art of relief above his own technical studies. If the profession will not educate such a practitioner the public will take what it deems to be the most available cult and build one by toning up his education a bit, reserving the call upon scientific exactness for emergency use only. They will do this in the name of general utility and they will be right.

In the field of maternal and infant welfare this evolution would possibly start with the midwife or the trained nurse as the active agent and would be costly indeed in health and well-being, but after many tribulations it would be accomplished. It is our duty to save this cost, and our technic must be to deserve confidence rather than merely to claim it.

For instance: We have neglected the puerperium and our public resents that. Proper conduct through that period does not depend upon diagnostic instruments of precision or upon handsome office equipment or upon recent discoveries, but does depend upon two of the special senses and judgment, and what I have chosen to call human understanding. An Albert Smith retroversion pessary, reshaped and fitted, will alone, many times remedy subinvolution and will give comfort through a protracted convalescence. We have failed to use it rightly because somebody has said that the age of the pessary was yesterday, and has failed to offer an adequate substitute. The same instrument with its homely technic of application will very many times indeed give perfect relief, in some empirical fashion, for a troublesome vomiting in the early months of pregnancy; and we have too largely ignored it because it was empirical. For the good of our patients it is well to cling to a limited amount of empiricism, remembering that quinine cured malaria just as efficiently before the dis-

covery of the plasmodium as it ever has since, and that the rules of procedure promulgated by O. W. Holmes more than four years before the scientific reasoning of Semmelweis was announced, will efficiently protect today's patients against puerperal fever of exogenous origin.

The welfare of mothers and infants rests now as before, squarely upon the medical profession, and upon the honesty with which that trust is met, depends much that is important in the future of both.

136 NINTH STREET.

A HYDROSTATIC BAG FOR THE INDUCTION OF LABOR*

BY GEORGE H. LEE, M.D., F.A.C.S., GALVESTON, TEXAS.

IN June, 1922, THE AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY published a short description of a bag which had been designed to combine the good features of the Barnes fiddle bag and of the Champetier de Ribes and Voorhees bags. It will be recalled that the purpose of the design of the Barnes bag was by resting in the cervical canal, to promote uterine contractions, by distending the cervical canal. The difficulty about this bag is that when it is distended the fiddle shape is lost. It becomes very much the same size throughout; that is, cylindrical in shape, and slips either in or out of the cervical canal. The Champetier de Ribes and Voorhees bags, on the other hand, are designed to rest entirely within the lower zone of the uterus and act as a foreign body, thereby inciting uterine contraction. The Voorhees bag has a small tube communicating with it, and does not in any way serve to distend the cervical canal; consequently, the advantage from its distension is not obtained. The Champetier de Ribes bag has a large tube communicating with it, of from 4 to 5 cm. in diameter, which tube is large to such length as to distend the vulva, and by so doing exposes the patient to infection from without.

This new bag was designed to combine the good features of the Barnes fiddle bag, by having a constricted portion which will rest in the cervical canal so that, when in place, it will distend the cervical canal and also a large portion that will rest in the lower uterine zone and act as an irritant to excite uterine contraction. The distal dilatation is globular in shape and so fashioned that it will rest in the vagina. A small tube of only one cm. in diameter communicates with the exterior, which tube is not sufficiently large to distend the vulva and keep it open. This bag is constructed of rubber fairly heavy, sufficiently so to permit a weight to be fastened to the tube that protrudes from the vulva, when necessary. A year's use of this

*These bags may be obtained from the Kny-Scheerer Co., New York.

bag by the profession has demonstrated its practical utility. The only difficulty seems to be in the fact that the smaller sized bag, as previously constructed, is too large to be introduced in an undilated cervix which has to be opened up by a steel dilator. For this reason arrangements have been made recently to manufacture and place on the market three sizes of this bag, as follows:

Diameters		
Small size:	Medium size:	Large size:
A— 1 em.	A— 1 em.	A— 1 em.
B— 4.5 em.	B— 6 em.	B— 7.5 em.
C— 3 em.	C— 4 em.	C— 5 em.
D— 5 em.	D— 7.5 em.	D— 10 em.

It is hoped that the addition of this smallest size will render this bag very much more useful, in that it makes it applicable to practically all cases.

Society Transactions

THE AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS

THIRTY-SIXTH ANNUAL MEETING

PHILADELPHIA, PA., SEPTEMBER 19-21, 1923

(Continued from February issue.)

DR. JEROME M. LYNCH, New York, N. Y., read a paper entitled
Diverticula and Diverticulitis. (For original article see page 269.)

DR. WILLIAM S. BAINBRIDGE, New York, N. Y., read a paper entitled
Duplex Uterus with Multiple Pregnancy. (For original article see
page 285.)

DISCUSSION

DR. DAVID WILLIAM TOVEY, NEW YORK CITY.—I would like to report two cases of double uterus. The first is a case of rupture of a gravid uterus bicornus unicollis, the other is a rupture of a double uterus with large hematocoele, mistaken for fibroids with pregnancy.

It is important to recognize these anomalies of the uterus, otherwise grave accidents may occur, as in the case reported, where the septum between the uteri was ruptured, and the omentum drawn into the vagina. What might have been the result, if, in the other case, mistaken for a fibroid, the bleeding had been treated by radium, as is the custom at present?

R. B., aged twenty years, menses regular, two children, sent to the Polyclinic Hospital, bleeding, with a foul discharge and a diagnosis of four months' pregnancy with a fibroid. An attempt was made by the house surgeon to dilate the cervix. As it was impossible to get enough dilatation to remove the fetus and placenta, the cervix was packed with iodoform gauze, the patient put to bed and ergot given. The next day, after a few hours of regular contractions, the pains stopped suddenly. The house surgeon in an attempt to clean out the uterus, passed a sound in its full length, and with sponge forceps he removed piecemeal a four months' fetus, and part of the placenta, and drew the omentum into the vagina.

On my arrival I found the patient shocked. On opening the posterior culdesac, blood and clots were evacuated. A cigarette drain was inserted and the abdomen opened. I found a double uterus, one horn of which had been enlarged by pregnancy, with a ragged hole, larger than a silver dollar, in the uterine tissue of the gravid horn, where it joined the nongravid horn opposite the internal os. This tissue was less than a quarter of an inch thick.

A supravaginal hysterectomy was done at the internal os. She recovered after a stormy convalescence. Examination of the removed specimen, showed a uterus bicornus unicollis, with a ragged hole, the size of a silver dollar, in the septum of the gravid horn between the cornu. Adherent to the edge of this hole, a piece of degenerated placenta, two by four inches, was found. The supravaginal part

was enlarged and had contained part of the ovum and membranes. The non-gravid horn was fully developed, as were the tubes and ovaries.

I believe that after the cervix was packed and ergot given, contractions ruptured the thin uterine tissue between the horns, and the house surgeon passed his instruments through the hole opposite the cervix, and drew down the omentum in his attempt to clean out the gravid horn. The pains stopped suddenly as they always do, when the uterus ruptures.

A. W., 31 years of age, one child four years old, one miscarriage two years ago at three months; menses regular, five to seven days; last menses were ten days before the usual time. Bleeding off and on for the past three months, badly constipated for five weeks. She came to the clinic, complaining of severe pain in right abdomen from the iliac fossa to ribs, and cramp-like pain in the pelvis with bleeding.

On abdominal palpation a hard round tumor above the pubes, reaching half-way to the navel on the right side was found. Vaginal examination revealed cervix and vagina normal, with a round hard mass filling the pelvis, and pushing an enlarged uterus, the size of a two months' pregnancy against the pelvic wall on the left. The diagnosis was a large fibroid, with early pregnancy, fetus dead.

Upon opening the abdomen, a large round bluish tumor presented. It was a large hematocele adherent firmly in the pelvis. Rupture occurred in an attempt to deliver it. A ruptured ectopic tube and broken down ovary were found on the right side of what proved to be one horn of a double uterus. Against the pelvic wall, the left horn slightly enlarged with normal tube, an ovary was seen. A deep sulcus one inch wide covered with vesicouterine peritoneum and the bladder separated the two horns. The vesicouterine peritoneum was separated from the supravaginal portion of the right horn, and a supravaginal amputation removed this horn with the ruptured ectopic tube and ovary. The vesicouterine peritoneum was sewed over the raw surface of the amputated supravaginal cervix. There were two very distinct supravaginal portions of the cervix, but only one vaginal portion. The left horn with normal tube and ovary now looked like a uterus, the right tube and ovary of which had been removed. She has since had a baby. Both these cases had children, but the physicians who delivered them did not discover the conditions present.

DR. JAMES F. BALDWIN, COLUMBUS, OHIO.—I have had several cases of double uterus. In some, children had been delivered without the slightest difficulty, and the deformity was discovered by accident. I had one case of a young girl who was operated on for appendicitis and it was found that she had a one-horned uterus. Fearing that there might be difficulty in child-birth I warned her people that if she married and became pregnant they should let me know or report the case to some competent obstetrician. Some years later she did become pregnant, was sent to me, and was put in the hospital. One of our leading obstetricians was associated with me. She fell into labor, but the pains were inefficient, and after giving her plenty of time we agreed on a cesarean section, which was made in the usual way. The uterine tissue, as anticipated, was found remarkably thin, as there was of course only half the normal amount of tissue present. I excised the tubes from the uterus after delivery so that there would be no more pregnancies. The patient made a prompt recovery.

DR. GEORGE CLARK MOSHER, KANSAS CITY, MISSOURI.—I have seen three cases, somewhat similar, two of which were double uteri, and a third a fetal development of Müller's ducts with a single vagina. The first two delivered themselves without any untoward conditions, and the third one was a case in which I

was called in consultation, where the woman had been in the hands of a professional abortionist, and had an abortion induced with a puncture through the non-pregnant horn of the uterus. She died from a general peritonitis.

DR. H. DAWSON FURNISS, New York, N. Y., read a paper entitled **Fulguration of Hunner Ulcers.** (For original article see page 288.)

DISCUSSION

DR. FRANCIS REDER, St. Louis, Missouri.—Possibly a bladder ulcer is of the Hunner type when, after you have opened the bladder you are unable to demonstrate it. That is what I encountered once. A woman, thirty-two years of age, had been in the hands of a specialist for two months and was making no progress. She became dissatisfied and fell into my hands. I saw the specialist and talked with him about the case. He presumed the condition was a Hunner ulcer. She urinated almost every half hour, day and night, suffered severe pain in her bladder, and was rapidly becoming depleted in strength. The specialist cauterized the ulcer on two different occasions. I performed a cystostomy with the intention of excising the ulcer. The ulcer was supposed to be on the left lateral wall, more anteriorly than posteriorly. Carefully examining every fold of the bladder I was not able to find the ulcer. There was an extremely hyperemic condition of the bladder mucosa. The bladder was drained for three weeks. This was eight months ago, and so far she has been free from pain. The desire to urinate is still quite frequent, two or three times at night, and about four times during the twelve hours of the day; otherwise she is in excellent condition and has taken on weight.

DR. BURNLEY LANKFORD, Norfolk, Va., presented **A Study of 300 Private Postpartum Cases with Reference to the Pelvic Floor, Cervix and Fundus.** (For original article see page 275.)

DISCUSSION

DR. GEORGE CLARK MOSHER, KANSAS CITY, Mo.—Dr. Lankford's paper, because it is on a subject that so often is overlooked by the busy man doing a large obstetric practice, is valuable and timely. The average man does not follow up his cases with sufficient care to give them the best possible after-results.

DR. EDWARD SPEIDEL, LOUISVILLE, KENTUCKY.—There are a few things which should not be attributed to poor obstetrics. There is no doubt that in observing our patients postpartum, at times we are very much astonished to find a poor perineal floor and badly lacerated cervix in a case in which we thought we had done excellent obstetrics, which proves undoubtedly that there is a difference in the degree of elasticity of the pelvic floor in women, and in consequence laceration occurs under the best of circumstances.

The most important thing to impress upon the lying-in woman is the fact that it takes fully six weeks under normal circumstances for the genital organs to return to a normal condition, and that after her departure from the hospital at least four weeks should be spent in conducting herself as a convalescent. During the time such women are in the hospital they should be kept off of their back as much as possible. We have our patients lie on the side, and if they can be induced to do so, to lie upon the abdomen. In that way we favor involution and prevent backward displacement. After the seventh day we use the knee-chest position. In those cases in which the bloody lochia persists for a longer time

than usual, we assist the involution by hot vaginal douches and keep the patients in bed a longer time.

DR. JOHN O. POLAK, BROOKLYN, N. Y.—This paper of Dr. Lankford is most timely in these days of antepartum furor. Antepartum care does diminish toxemias, but it must be supplemented by good obstetrics, and that good obstetrics must be supplemented by proper postpartum care by a careful person if the obstetric patient is to get the best. In most of the maternity centers they give casual prenatal care but the patients are so placed sociologically that they do not get the consecutive obstetric and postpartum care that the doctor has mentioned. Those of us who have followed our work know that everything he has said is true; that about 25 per cent of these women, no matter how they are discharged from the hospital at the end of the first two or three weeks, come back with a retroverted uterus because of its lax supports. We try to obviate this as well as we can very much on the line Dr. Speidel has spoken about, yet we go a little further. Our patients in the wards have to spend their day divided into four parts, and three parts on the abdomen and on the sides. We then teach every woman and every nurse how to put a patient in the knee-chest position and allow air to go into the vagina to inflate it. We have adopted the "monkey trot," walking on all fours, and by that simple procedure we have reduced the number of retroversions from 25 to 2 per cent. His suggestion of the use of the pessary is most timely as we are doing too much operating for retroversion, and those who do retroversion operations find a large proportion relapse, really a larger number than those where we used to use the pessary. If we can get the cervix and the pelvic structures in good condition, as can be done when we adopt intermediate repair of the cervix in pelvic floor lacerations, and follow out postural treatment during the lying-in period, supplementing it with a pessary, we will have a larger percentage of well women who will not fall into the hands of surgeons.

DR. ABRAHAM J. RONGY, NEW YORK CITY.—It is my impression that pelvic defects after childbirth are not of local but of constitutional origin. In some women the muscular structures are such that they will stand labor, while others will not stand labor, no matter what you do, and there will always be a number of lacerated cervixes and lacerated perinei. The same thing holds true with regard to abdominal viscera, dropped cecum, and dropped abdominal structures. Of course, immediate attention to improve the tone of the muscular structure is in order, and I think Dr. Lankford has called our attention to one of the most important things in connection with postpartum care, particularly in those cases that have a dropped uterus, and if the uterus is supported by pessary for a certain length of time it may return to the normal position.

Then comes the next problem, as to what to do with the second stage of labor. Shall we permit a woman, who has reached the second stage of labor, after the cervix has been thoroughly dilated, to continue the labor and allow her to press for two or three hours until the head presents, or shall we, after the cervix is fully dilated a certain length of time, deliver these patients and prevent laceration of the pelvic floor, and if she is lacerated, repair it right then and there? Those women, whose muscular structure is not what it should be, if allowed to remain a long time in the second stage of labor, do a great deal of damage to the pelvic floor, and are better off if they are delivered gently by forceps.

It is still a question in my mind, whether any plastic work should be done on the vaginal vault, if the woman has only one baby. The birth of the second child not only undoes the operation, but it very often causes dystocia.

DR. JAMES E. DAVIS, DETROIT, MICH.—During the past year there came to my notice an incontrovertible argument for immediate repair of the cervix. A young woman, multipara, died after her third childbirth from hemorrhage originating in a small tear in the cervix. It was my opportunity to do a very searching autopsy upon that case, and there was absolutely no evidence whatsoever of any cause, for death other than that of loss of blood. The laceration of the cervix could easily have been repaired immediately. Other measures were adopted which did not succeed in stopping the hemorrhage, and the patient died within three hours after childbirth. While that is one of the striking arguments for immediate repair, I do not mean to advocate it in all cases and say that they call for an immediate repair, but there are certain cases in which the indications are clearly defined.

DR. MAGNUS A. TATE, CINCINNATI, OHIO.—When a woman bleeds excessively after she has her baby, any good obstetrician will try and find out from where and why she is bleeding, and if the cervix is badly torn he will repair it. That is ordinary, good common sense. If she is not bleeding very much, we do not pay any attention to the cervix primarily.

DR. LANKFORD (closing).—When I first began the practice of medicine I thought the pessary was a back number and that it was a confession of ignorance to use it, but in the last three or four years I have come to consider it a most valuable instrument, and I am glad to find that the rest of the men uphold me in its use. Some of these women had short anterior vaginal walls and cervical lip. Some of these women have constitutional conditions which cause displacement. The short anterior vaginal wall causes backward displacement of the uterus. I learned from Dr. Polak several years ago the value of the kangaroo walk or monkey trot which has a great deal to do in correcting backward displacement of the uterus. I have induced a great many of these women to use the monkey trot, and some of them do it after they leave the hospital and are out of my immediate supervision. My mistake has been in not making them do it while they are in the hospital. A woman will very often allow her bladder to overdistend voluntarily. If we cautioned her against it and told her the reason why, the displacements would be fewer.

DR. MAGNUS A. TATE presented a Case Report entitled **Carcinoma of Base of Appendix**. (For original article see page 291.)

DISCUSSION

DR. HUGO O. PANTZER, INDIANAPOLIS, IND.—I had a collateral experience in the last few weeks in a patient who had similar condition. I found a mass of almost calcareous feces, removed partly by most assiduous efforts before operation, and the balance after operation. My patient had a widely diffuse inflammatory swelling in the wall of the upper ascending colon, with abscess area and rectal temperatures from 99.5° to 102°.

DR. JAMES E. DAVIS, DETROIT, MICH.—Just a word before Dr. Tate closes the discussion. I have just inquired where the tumor was primary, and he told me he thought in the appendix. That is an interesting statement in connection with this case. Cancer of the appendix is not very malignant, but it does produce obstruction which, of course, will very readily kill the patient. This thought may have some bearing on this case.

DR. RUFUS B. HALL, CINCINNATI, OHIO.—I want to say a word especially in reference to the operation performed by Dr. Tate. Excision of the colon in this case would have been a typical operation. An ideal operation was not made. Why?

Because this patient was paralytic, almost dead, regardless of her physical condition. With this operation she got well and is likely to live a few years more. With a radical operation she would have died on the table or within a few hours. Dr. Tate displayed good surgical judgment in the management of the case.

DR. GEORGE CLARK MOSHER, Kansas City, presented a paper entitled **Maternal Morbidity and Mortality**. (For original article see page 294.)

DR. EDGAR A. VANDER VEER, Albany, N. Y., read a paper entitled **Septic Infection Following Childbirth, or an Analysis of Maternity Mortality Considered from the Standpoint of Increase of Deaths Among Mothers**. (For original article see page 280.)

DISCUSSION ON THE PAPERS OF DRs. MOSHER AND VANDER VEER

DR. EDWARD SPEIDEL, LOUISVILLE, KY.—I would like to enter a protest against some of these statistics in regard to puerperal infection, as they are unreliable. Many cases of latent tubercular or gonorrheal infection become active after the birth of the child, and are inevitable. I make that statement because fully two-thirds of the cases of puerperal infection in our city hospital in Louisville on investigation have proved to be due to such causes, and statistics taken from the general reports of large cities include many cases of that kind and therefore create an erroneous impression. There is no doubt at all but that there is plenty of room for improved obstetrics, but obstetrics should not be charged with such improper death results.

Another thing; you cannot improve obstetrics as long as the general practitioner, who treats pneumonias, influenzas, scarlet fever, and other infectious diseases, and treats minor surgical suppurating wounds, does the majority of obstetric work in this country, with very poor pay and goes into surroundings in which asepsis is impossible. The difference in the death rate between midwives and such a general practitioner can be ascribed to the fact that the midwife does not come in contact with these infectious conditions. Until communities pay for good obstetric work and see that proper care is given the mothers, such as we now have in certain maternities, it is up to the women to provide better obstetric care for themselves.

DR. JAMES E. DAVIS, DETROIT, MICH.—Whether we believe the statistics or not, if we choose we can discount them somewhat, yet a very serious matter is before us. I have no doubt that the statistics are nearly correct. I do not think the last speaker (Dr. Speidel) has given sufficient reason for doubting these statistics. There is one point concerning which I wish to differ from him, and that is the importance of gonococcal infections. It has not been my experience that patients die very frequently from gonococcal infections. Those patients that die usually have multiple infections, streptococcal, staphylococcal, or colon contaminations with gonococcal infections, but with a single gonococcal infection I do not find there are many women who die therefrom.

I am very sure in our section of the country that the chief difficulty does not lie with the training of our young men in the undergraduate schools. The young men at the present time are exceedingly well trained. The great need today is for training of a postgraduate character, and just as soon as we remedy that part of our work I think our statistics will change. An association like this ought to be insistent in driving home such statistics as we are confronted with, and we ought to point out what are the reasons for these statistics.

Regarding the question of good obstetrics, I have in my laboratory five specimens of ruptured uteri which are distinct reflections upon men who are practising obstetrics, and I firmly believe that these accidents resulted because the men were in a great hurry. In one case the pelvis was fractured in three different places. There was no dystocia. Instruments were used too quickly and were used with too much force. Of these five ruptured uteri, one specimen showed that death was due to a tear in the cervix.

DR. JOHN O. POLAK, BROOKLYN, N. Y.—There has been an attack made on the statistics presented, and perhaps it might be of interest in this connection to speak of some investigations that I made and were reported before the last meeting of the American Medical Association. These were obtained through the courtesy of the New York Lying-In Hospital, the Boston Lying-In, the Johns Hopkins Out-Patient Service, and our own clinic, and also through the courtesy of Dr. Nicholson, of Philadelphia. These statistics, I understand, were entirely reliable. In Philadelphia where midwives are under strict medical control there was one death in 904 cases. In the joint statistics of the New York Lying-In, the Boston Lying-In, the Johns Hopkins University and our own clinic, where the out-patient service is attended to by students under supervision, there was one death in 791 cases. Compare this with what happens in the City of New York, where there was one death in 174 cases, and you get exactly what is back of it. Our students are well prepared; their work is supervised, and the midwives whose work is supervised get good results, but the moment the general practitioner gets loose, his work is not supervised, and then there is trouble.

DR. ASA B. DAVIS, NEW YORK CITY.—If we give credence to statistics from fairly reliable sources we find that, next to tuberculosis, childbirth causes the greatest number of deaths in this country; that for the eighteen nations in which statistics of reasonable accuracy are available, this country ranks third from the worst on this list in the matter of maternal mortality caused by childbirth. This is a very dark picture for America. It is time something should be done about it. Something is being done—but we are moving too slowly, and much more should be done. The cause of tuberculosis is known. It is arrested, cured, or prevented in many cases. Nobody now doubts that, with enough public cooperation, education, money and work, it is possible to stamp out this disease.

The cause of cancer, the third most fatal disease, is not known. Many of the best intellects and workers in the world, with the best known equipment and unlimited means, are urgently searching for this cause. Until it is found we cannot expect great progress in bringing this dreadful malady under control. It is largely a disease of middle or later life. Childbirth occurs in young and middle life. About ninety per cent of pregnancies, labors, and recoveries are nearly uneventful and without danger. The causes of danger, complications and death from this condition are known. There are dangers during pregnancy, but comparatively few women die during this stage of the process of reproduction. The majority of deaths occur in young healthy women, due to surgical uncleanness on the part of the accoucheur or poor and untrained obstetric judgment as to the manner of delivery. Because of the comparative youth, and the need for the mother in the home with young children, the economic loss is far greater than from an equal number of deaths from cancer. The picture is not as dark as it has been. Vast improvement in obstetric results have taken place during the past thirty years. Education is going on in the case of both obstetric practitioners and the public. It is important in both. Now there are islands, as it were, which show excellent results as regards mother and child. These islands should be extended, expanded and coalesce until they cover our whole country, by a method of obstetric practice which has been success-

ful in the hands of some private physicians, and in the better maternity services. We need more specialization in obstetrics. Those who practice this branch of medicine should give it enough time and attention to do it well, or they should leave it alone. The adverse surroundings, lack of aid and suitable equipment found in private practice, is often given as an excuse for bad results. In Brooklyn, in New York, and, I doubt not in other cities the out-patient departments of maternity services are conducted under supervision, with little assistance, in surroundings so bad that none worse can be found, and yet with results, as to complications, morbidity, and mortality, so good, that they rival those of the best equipped maternity hospitals. In effect this sort of maternity work in the tenements is private practice under the most adverse conditions. If such results can be obtained by some private physicians and hospitals, this should be required from all. If I speak of the Lying-in Hospital, I mention it as a type and because I know its workings. Not long since, *we completed four and a half years showing over ten thousand deliveries without a maternal death, in the tenements.* During that time, however, of the cases who could be given better care by sending them from the Outdoor Department to the hospital twenty died. The Lying-in Hospital is not unique in this respect. Such results can be obtained in private homes, in the tenements, in the slums, in country districts, and in hospitals, if those who practice obstetrics will make use of the training which is available today, use surgical principles, not do too much, and yet interfere quickly when it is necessary. Then we will have better obstetric results. Another thing; we may rest assured that rapid progress will not come until the people themselves awaken to the situation and demand better results and cooperate in efforts to obtain them. Hospital populations are becoming well educated, they are willing and eager to follow instructions, to present themselves at regular intervals during pregnancy for observation, examination, and advice. In the Lying-in Hospital service, which delivers annually something over five thousand women, eclampsia was formerly a very common and much dreaded condition. Now we do not have enough cases of the eclamptic stage toxemia to provide our interne staff, pupils, and nurses, with an adequate idea of what eclampsia can do. This change has occurred within a few years. Eclampsia is treated before it occurs. It is but a stage in toxemia. If symptoms of toxemia begin to develop they are detected early, and treatment is begun right away, as though eclampsia were imminent.

Bad as the situation undoubtedly is at present, improvement is coming much faster than we may realize. We have but to look back a generation and note the obstetric conditions and practices of that time. There were very few maternity departments and hospitals then. Training schools for nurses found difficulty in securing the required obstetric training for their pupils. We had only to select the training schools and indicate the number of pupil nurses we could utilize. It is far different now. Inconvenient as it sometimes is to feel the shortage of pupil nurses in this work, in a large sense it is well, because there are more places in which obstetric training is given. General hospitals are adding extensive maternity departments. Large maternity hospitals are springing up all over the country. In towns it was rare to find a hospital of any kind; now many of the small communities have some kind of a hospital, some of which are modern and well equipped. In practically all of them provision is made for the care of obstetric cases. Hospitals of themselves do not make competent obstetricians, but it means that more doctors and nurses—some of whom will later practice obstetrics—are given training in this branch of medicine, in hospitals large and small. At the Lying-in Hospital, our interne staff members serve for four months. It is about as long as they can endure the intensive training in simple and complicated obstetrics. We consider these men our most satisfactory postgraduate pupils.

DR. JOHN W. POUCHER, POUGHKEEPSIE, N. Y.—We have heard in the discussion of these papers about the statistics of puerperal mortality, these statistics being more favorable concerning cases in the large cities. I want to say a word or two for the rural districts. In the large cities we have the advantages of modern education of both medical students and attendants. We have efficient outdoor departments and up-to-date maternity hospitals. We have efficient doctors and health settlement workers. There is everything being done to educate not only the doctors and nurses but the people themselves. The rural districts, according to the statistics quoted this morning, are worse off than the large cities. I am speaking now of the rural parts of the country itself. For thirty-five years I have been doing consulting work through a section of New York state and during that time have run across a great many of these cases, and I think I can tell you something regarding the reasons for their frequent occurrence. In the days when I was a medical student our only obstetric work was a little manipulation with the mannikin and a few didactic lectures. The only delivery I saw in my student days was when my old preceptor in the Berkshires went to sleep one night and refused to be awakened, and I was obliged to officiate at the delivery. He told me afterward, that was his object in going to sleep. I went through college and then out into the country where I practiced for two years and during that time I did considerable obstetric work. I do not remember having a fatality occur during that time, but that was more good luck than good management.

We are confronted in the country by two or three unfavorable conditions, one of which is the growing scarcity of practitioners. None of the young doctors who are educated today are going into the country to practice. There is no criticism about that if they can do better in the larger cities. We are depending upon the doctors who are educated as I was in my day, and who received a very meager education on this subject. Some of them have progressed rapidly since that time. There are men you can teach, and there are men you cannot teach. Some of these I would just as soon trust in a case of labor as any one I know. I would do cesarean section or any operation upon their patients who had been days in labor, and I have done it when they have made an attempt with forceps and failed, with universal success.

There are two things about technic, the preparation of the patient as well as the preparation of the doctor. All your rubber gloves, all your preparation will not avail you anything if you have a filthy, dirty patient to work with, and that is part of the conditions that we have to meet, especially in country practice.

There are in every section of the country medical men who have not progressed with the times, men whom you cannot reach with your literature. The medical society does not help them because they do not attend meetings, and it is from these men the consultant usually gets his cases, usually too late to do anything for them. We must direct our efforts toward education of the patient, if we want to reach these people. When prenatal clinics or the district nurse reaches the rural sections as they have the large cities, we shall have the same good results, and not before.

DR. O. M. GRUHZIT, DETROIT, MICH.—There are three main factors to be considered: the patient's economic condition, her intelligence and the medical care and skill available to her.

A patient with limited means in many cases cannot afford the same medical service as her wealthier sister. The call for physician is delayed at many times to the last minute to curtail the expense even in the face of somewhat alarming symptoms. In many communities the lying-in hospitals associated with civic administration do not fulfil their mission as many women hesitate to take advantage of them because of their false pride and fear. The degree of intelligence of a patient concerning the puerperium to a large extent increases or decreases the dangers of

infections, likewise the failure to observe hygienic methods coupled with ignorance as to the grave consequence from undue exposure to contamination.

To reduce the death rate among the childbearing women in this country from a high level of 20,000 per year, the economic condition will need improvement in many instances.

There is a fertile field for extensive education among a large class of pregnant women along the lines of personal hygiene.

DR. BURNLEY LANKFORD, NORFOLK, VA.—The men at fault at the present time are those who are not interested in obstetrics, but who think they have to do it to keep their family practices. If societies of this type and the various medical societies throughout the country would organize obstetric sections, and get those men who have to do obstetrics interested, and get them willing to take some time every few years for postgraduate instruction, much can be accomplished. If this body would enlarge its membership as much as possible, I think the day will be hastened when more people will put their trust in the doctor than in the midwife. I think this Association and kindred associations should propagate the value of rectal examinations. Of course, that is an old subject and more or less hackneyed. Men of this society do not fear vaginal examination as they know how to make it, and their patients do not need frequent vaginal examinations. It is surprising to know with what carelessness the average practitioner of forty-five and fifty years of age does vaginal examinations. I believe that is one of the chief reasons we have so much sepsis. If these practitioners can be trained to make rectal examinations and learn that in the average case they can make a complete diagnosis through the rectal touch and not make half a dozen vaginal examinations during labor, much good, in the aggregate, will result.

NEW YORK ACADEMY OF MEDICINE

Section on Obstetrics and Gynecology

Stated Meeting, November 27, 1923

DR. WILLIAM E. CALDWELL, IN THE CHAIR

DR. W. HALL HAWKINS reported **Two Cases of Inversion of the Uterus.**

Both cases occurred in the homes while the patients were under the care of midwives and were admitted to the service of Dr. Frederick W. Rice at Bellevue Hospital.

CASE 1.—Mrs. A., admitted August 29, 1922, para i, age eighteen, was delivered spontaneously at full term after a short easy labor. The midwife told the ambulance surgeon that the patient began to bleed profusely as soon as the child was born and following her endeavor to remove the placenta by pushing on the fundus and pulling on the cord the inversion developed. About thirty minutes after the accident, the patient was found very pale and almost pulseless; although she was not bleeding at the time. The placenta had already been separated from its attachment to the uterus which was near the fundus.

The ambulance surgeon immediately put on a pair of sterile gloves and by means of his fist reinverted the uterus, and packed it with gauze. Pituitrin 1 c.c., morphine grs. $\frac{1}{4}$ were given and the woman was removed to Bellevue Hospital in profound shock, with marked restlessness ending in coma. Pulse was 140 and very weak, fundus hard and felt in midline. Examination of the vagina showed there was a second degree laceration. Two pieces of gauze were removed from the vagina and cervix. No laceration of cervix, and no bleeding at this time. Measures to combat shock were instituted immediately but the patient never reacted, dying two hours after admission.

CASE 2.—Mrs. B., admitted September 29, 1923, para ii, age twenty-four, had been delivered normally 18 months before of a full term baby with no complications during labor or puerperium. In this case, it was about an hour and a half after the accident before the ambulance surgeon was called. He found the woman showing signs of severe shock with only slight hemorrhage, and the uterus with the placenta still attached protruding from the vagina. He separated the placenta and then made an effort to replace the organ but after a short trial found it was impossible so he wrapped a towel about the uterus and rushed the patient to hospital. Morphine gr. $\frac{1}{4}$ administered.

On admission the patient was practically moribund, skin pale, cold and covered with a clammy perspiration, pupils dilated, breathing shallow, pulse barely perceptible. No effort was made to replace the uterus. Measures were immediately started to combat shock but to no avail, as she expired fifteen minutes after admission. There was only very slight oozing from the inverted uterus. The placental site was near the upper left part of fundus and adherent to it was a bloodclot with minute pieces of placenta. Uterus was large and very edematous from strangulation. No autopsy.

DISCUSSION

DR. CALDWELL.—I can recall only two cases of inversion of the uterus. One occurred at the Lying-In Hospital, in the outdoor service. The student who was

delivering the woman pulled on the cord and when the staff obstetrician reached the case, the uterus was lying between the thighs. The placenta was scraped off, the uterus washed with bichloride, and replaced and the woman made an uneventful recovery without fever.

In the second case the inversion occurred as the result of a slight pull on the cord, again by a student, and the woman was dead before I could reach the table from the seats.

Inversion of the uterus may occur during a manual extraction of the placenta, the fundus following the hand out.

DR. GEORGE L. BRODHEAD read a paper entitled **Dry Labor: A Study of 182 Private Cases.**

There is, and always has been, a great diversity of opinion with respect both to the course of labor in these cases and the ultimate outcome for the mother and child. In order to study a series of cases, and to consider the problem from all angles, I collected 182 cases from my private work. In this series are included patients at or near term, in whom the membranes have ruptured spontaneously prior to, or at the time of, the onset of labor, and all cases have been excluded in which the membranes were accidentally ruptured in the attempt to insert a bougie or bag for the induction of labor.

The opinion has been widely expressed that premature rupture of the membranes made one suspicious of contracted pelvis, but as a matter of fact there was no case of deformed pelvis in this series.

Malpresentation has been suspected when the membranes have ruptured early. There were 107 primiparae and 75 multiparae. The breech presented in three primiparae and in one multiparae. In three cases of twins, one child presented by the breech. In one multipara, there was a complex presentation of the head, foot and umbilical cord. Excluding the breech presentations, there was only one malpresentation in the entire series, namely, the complex presentation just mentioned. Including the seven breech presentations, the vertex presented in 96.2 per cent.

The average age in 106 primiparae was 27½ years; in 69 multiparae 30½; in 175 patients 28.7 years.

In 102 patients the membranes ruptured at the onset of labor; in 80 cases the rupture occurred before labor began. In one of the latter cases the membranes ruptured one month before the onset of labor, while the shortest period was 30 minutes, the average being 21.6 hours. Omitting the case in which one month intervened, the average was 12.7 hours.

In 16 cases in which the membranes ruptured at least 24 hours before labor the outcome was normal for both mother and baby. Of these 16 patients eight were delivered by low forceps, two by median forceps, and in six delivery was spontaneous. In one of these cases the duration of labor was 44½ hours.

Tabulated data of the duration of labor shows that the average duration of labor in primiparae was 13.42 hours,—a period apparently considerably shorter than the average for normal labor—while the average duration for multiparae was 7.42 hours, also shorter than for normal labor. The average duration of labor in eight primiparae, in whom the membranes had ruptured at least 24 hours before labor, was 16+ hours; in the multiparae the average was 7+ hours.

There were, in 107 primiparae, 20 spontaneous deliveries, 18.7 per cent; in 75 multiparae there were 56, or 74.6 per cent. The operative deliveries were as follows: In the primiparae, low forceps, 76 (71 per cent); breech extraction, 1 (1 per cent); version, 1 (1 per cent); high forceps, 1 (1 per cent); median forceps, 9 (8.4 per cent). In the multiparae, low forceps, 11 (14.6 per cent); breech ex-

traction, 1 (1.3 per cent); version, 2 (2.6 per cent); median forceps, 4 (2.6 per cent). In other words, practically 90 per cent of primiparae and multiparae were delivered spontaneously or with low forceps. The high percentage of low forceps operations in primiparae with dry labor is due, not to the dry labor, but to our efforts to shorten the duration of labor and thus spare the woman needless suffering.

There was no cesarean section in this series. Bags were used in 10 cases, in some of which at least they were not indicated, in the light of our present knowledge. There were 10 cases of persistent occipitoposterior position, which required the Scanlon rotation with forceps; eight were in primiparae, seven being low forceps cases and one a median forceps; two were in multiparae, one being a low forceps, the other a median forceps. We do not attribute persistent occipitoposterior position in any way to dry labor. There were 10 dry labors in primiparae over 35 years of age; all of the mothers and babies were in good condition.

In six primiparae and six multiparae in this series there was a loss of blood of approximately 16 oz., in nine primiparae and one multiparae the loss was about 16 to 20 oz., and in four primiparae and six multiparae from 20 to 24 oz. In two multiparae there was more profuse hemorrhage with complete recovery. There seems to be no relation between premature rupture of the membranes and blood loss.

The average weight of the babies in the case of 103 primiparae was 7.2 pounds; in multiparae the average weight of single births was 7.5 pounds.

There was no maternal mortality or morbidity in this series. In the 182 cases, where the babies were alive at the onset of labor, the fetal mortality was 1.6 per cent. In two of the three fatalities occurring in the infants of primiparae the premature rupture was apparently not responsible for the fetal death.

So far as pain is concerned it is difficult to estimate the effect of premature rupture. Theoretically, the labor should be more painful, but judging from our experience I am not able to state that patients with dry labor have more pain.

There is no specific treatment for dry labor. Pain should be relieved in every possible way with morphine, hyoscine or nitrous oxide gas. Should uterine inertia be present, with incomplete dilatation of the cervix, we can aid to greater advantage by the introduction of a modified de Ribes bag than by any other method.

From experience I conclude that dry labor, in the absence of abnormal conditions, such as contracted pelvis, relatively large child, malpresentation, prolapse of the cord, etc., should be attended by no harmful results to mother or child.

DISCUSSION

DR. GEORGE W. KOSMAK.—Dr. Brodhead is to be congratulated on the results in this series of cases. The results are such that one might be led to think that it is perhaps easier for women in dry labor to go through the process of delivery than for those who have the membranes intact. To follow out this idea we would have to overcome our preconceived ideas that unruptured membranes are the thing to be maintained. From Dr. Brodhead's figures it might be concluded that it would be a good thing if we always ruptured the membranes early. This series of cases which Dr. Brodhead has described bears out our impression that premature rupture of the membranes occurs frequently. We have assumed, and textbooks bear us out in the idea, that premature rupture of the membranes spells trouble, but it seems to be contradicted in this series of 182 cases.

The cases in this series were all private patients, and being private patients we must assume that they were in good general condition and had been very carefully observed. We must also assume that they were in good health, that the musculature was well developed and they were in better condition to withstand labor than a similar series of hospital cases. That there would be a similar result in hospital

cases is questionable. I still feel that I must differ with Dr. Brodhead in regard to the general run of dry labors, because usually a woman, especially a primipara, whose membranes have ruptured when the cervix was not fully dilated, does not go through labor as easily as one whose membranes have been maintained unruptured until the cervix is fully dilated.

In dealing with dry labor I believe we are sometimes puzzled as to what course to follow when we are told that Nature must be left to her own devices. After a woman has been pounding away for 12 to 24 hours, we often wish we had done something to aid in dilating the cervix and saving the patient exhausting pain and some of the after-effects of the prolonged labor. While usually we should give a patient plenty of time to deliver herself, we ought to be ready to interfere after labor has been given a trial and there have been no definite results. I have had to be quite radical at least in one instance, in which after rupture of the membranes and draining away of the fluid it was found best to resort to cesarean section. The patient was a young woman, 19 years of age, with a long conical cervix, which after four days' labor showed absolutely no change. It seemed that introduction of the bag would be of no use, and it would take 24 to 36 hours to get results, and in the meantime the baby would be lost. So I did a cesarean and the woman left the hospital in two weeks with a live baby. Another class of cases in which the bag can be used to advantage is in multiparae who have had previous labors, probably instrumental, and where there is scar tissue which makes labor distressing. In such cases the bag helps a great deal.

So I congratulate Dr. Brodhead on his results in this well-cared-for series of cases, but whether one in a hospital service could show such favorable results I am inclined to doubt. As a rule we can follow a waiting policy, but not too prolonged. If at the end of twenty-four hours satisfactory progress is not being made, some form of interference is indicated, not only for the sake of the mother but for the sake of the child.

DR. HARRY ARANOW.—It seems to me that a paper of this sort does not lend itself to discussion. Dr. Brodhead presents a set of carefully prepared facts and we cannot argue, but we can try to make a few deductions. One fact conveyed to me as a student was that rupture of the membranes was a serious complication of labor. When it occurred it thoroughly frightened me, and I felt that I should attempt to interfere, but as time goes on I find that I interfere less than previously. I am tempted to interfere where the water has pretty well drained away and the cervix is short and thick. Just recently I had a case of this character in a woman with a just minor pelvis and the water had drained away at the onset of labor. I felt that if left alone labor would continue for days, so I inserted the bag and a practically normal delivery followed. Evidently Dr. Brodhead does not think that any special treatment is necessary except to care for the obstetric condition that is there. Dr. Brodhead must have come across some of the very serious cases one sees in consultation, those that have been in labor for days and have to be helped out.

Another point that must be considered is the danger of infection. In prolonged labor after rupture of the membranes microbes enter the amniotic sac and even reach the placenta. Then again, we must remember that these cases were handled by Dr. Brodhead himself. I am opposed to the use of the bag in the late stages of labor when the head is well down, as it may get one into trouble. It is better to pack the vagina with cotton or gauze against the cervix and against the baby's head. Dr. Brodhead brought out the fact that he does not think that dry labor causes occipitoposterior presentation. How often does occipitoposterior cause rupture of the membranes? I am under the impression that with an occipitoposterior

in the early part of labor there is more likely to be a dry labor than with a normal position.

DR. SAMUEL J. DRUSKIN.—I would like to ask Dr. Brodhead what he means by premature rupture of the membranes. In the later days of pregnancy there may be a separation of the membranes from the lower uterine segment and there may be a pin-point opening high up in the membranes. Is that a premature rupture of the membranes? We see these cases quite often and the results are almost as good as in cases in which the membranes have not ruptured. Now, in every line of endeavor there are some bugbears, and in obstetrics we have mainly two, namely, occipitoposterior positions and premature rupture of the membranes. Some time ago I expressed my opinion about occipitoposterior presentations. At that time, I said, a condition that occurs once out of three times is not abnormal, as is the case in occipitoposterior position. Nevertheless, in a certain number of these cases great difficulties will occur. The same may be said of premature rupture of the membranes. As a rule, labor is not interfered with very much, but sometimes progress is very slow and we may encounter a great deal of trouble as a result of it. I have now a case in the hospital in which the membranes ruptured four days before the woman was delivered. She had several sleepless nights. I intended to put a bag into the cervix, but was influenced not to do so by the wish of the patient. After four days the pulse rose to 120, temperature 100°, and respiration 46. The head was in the pelvis, but the cervix was dilated only three fingers. I did a vaginal cesarean section and extracted the fetus with forceps. The woman did not lose a great deal of blood; yet she went into shock. She responded to the usual treatment; nevertheless, the next day, she was seriously ill with marked distention of the abdomen. This condition was relieved, but the following day she had the same complaint and her illness took a very unfavorable course. She was given a blood transfusion and ran a temperature of 103.5° for two days. Then the temperature came down and the rest of her convalescence ran a normal course. This is what sometimes happens when one does not interfere early; it is not well to wait too long. Often with a small dose (2 or 3 minims) of pituitrin we can start labor pains. When this fails the introduction of a bag to dilate the cervix is effective as Dr. Kosmak has already said.

In conclusion, I wish to say, though early rupture of the membranes is not necessarily a serious condition, it is, nevertheless, a condition that should not be left too long untreated.

A VISITOR.—I should like to ask Dr. Brodhead how he determines what dry labor is and how he classifies these cases. We have cases in which there is a great deal of fluid, and again others in which there is almost no fluid, and we have cases with all degrees of fluid. When the membranes rupture before the onset of labor, is it hard to tell how much fluid has been lost? We have to take the patient's word for it and that is very unreliable. In those cases in which the membranes have ruptured before the physician was called, it is difficult to tell whether the case is one of dry labor or of normal labor. It would be interesting to know what the effect of instrumentation was in the 135 cases delivered by forceps, and whether this method of delivery was in any way detrimental to the children.

DR. SAMUEL J. SCADRON.—Dr. Brodhead's excellent results in his cases of dry labor are no doubt due to his uniformity of treatment. If I understood him correctly he had about seventy-one per cent of low forceps cases in his series of private practice.

To my mind the shortening of the second stage of labor is a great factor toward lowering of the fetal mortality and also the unnecessary suffering of the mother.

I think that an equally good result may be obtained in hospital services, especially with reference to the fetal mortality, if the internes were permitted to shorten the second stage.

DR. HERVEY WILLIAMSON.—From my teaching experience I think that we should teach that when a large amount of fluid drains away it frequently means a difficult labor. I do not believe that part of our teaching should be changed.

DR. FREDERICK W. RICE.—I must agree with the last speaker in regard to the necessity of making a distinction between what is meant by dry labor and premature rupture of the membranes. In most cases, especially primiparae, when the membranes rupture early in labor we have to care for a labor that is not normal duration of labor. The prognosis in cases where the membranes rupture early, it interferes with the normal dilatation of the cervix. As a result, labor is unduly prolonged. In a vertex presentation where there is early rupture of the membranes, we have to deal in most cases with the posterior position of the occiput.

Some time ago, I had the occasion to go over the records of many thousands of cases and made special note of the duration of labor in cases where the membranes had prematurely ruptured. The results show distinctly an undue lengthening of the normal duration of labor. The prognosis in cases where the membranes rupture prematurely cannot be as good for the mother or baby owing to the prolonged labor. In cases where the fluid has drained entirely away, the prognosis is much more serious for both mother and baby. These cases are rare and there is always some definite reason why the presenting part does not act as a ball valve, and prevent the escape of the fluid from the uterus.

In the last week, we have had three such cases of dry labor at Bellevue Hospital. In one of these cases, the patient had a contracted pelvis and was in labor six hours before being admitted to the hospital. On admittance a cesarean section was immediately performed, but in that short time, a tonic uterus had developed. In the second case, an arm had prolapsed into the pelvis because of the presence of a cyst, which prevented the head's engaging. A tonic uterus developed before the cervix was fully dilated, necessitating interference. A third case was a breech with similar results.

A premature rupture of the membranes in vertex presentations occurs in nearly fifty per cent of the cases and in almost all of these cases there is a posterior position. If the occiput is not well anterior, the presenting part does not fit well into the lower uterine segment, and as a result the pressure on the fluid about the child during a contraction is transmitted directly to the forewaters, resulting in rupture. It is only in an anterior position that the head acts as a ball valve, completely shutting off communication between the forewaters and the fluid about the child, thus diminishing the pressure on the bag of waters during a contraction.

DR. CALDWELL.—When membranes rupture, either before labor has started or at the onset of labor, I believe a very careful examination should be made, and if there is any displacement of the presenting part, such as an extended head or a parietal presentation or a breech with extended legs, every effort should be made, by manipulation, to correct this position as far as possible, and fill the lower uterine segment with the descending part to take the place of the ruptured membrane. Occasionally, when this cannot be done, especially in breech presentations, and the lower uterine segment is lying loose with nothing in it, I believe the insertion of the bag is indicated.

In the majority of cases with a rupture of the membrane I agree with Dr. Brodhead that they will come through normally. I do not believe in the routine use of bags in such cases, or displacing the presenting part by the insertion of the

bag. I am always irritated to hear talk of waiting twelve to twenty-four hours before doing anything. I think the labor should be planned as early as possible when the membranes have ruptured.

DR. BRODHEAD, (closing).—Dr. Kosmak asks, since the results have been so satisfactory in these cases, why not rupture the membranes in all cases? Because, in some cases, there might be a loop of cord presenting, or we may have a face presentation, a breech or an occipitoposterior; I am not teaching that this is the thing to be done, but am simply giving my experience with cases in which this accident has happened. Dr. Kosmak is correct in assuming that the results in private work are better than they would have been in a series of hospital cases. We should get better results in private practice than we can in hospital work. It must also be borne in mind that some of the hardest labors we see are in cases in which the membranes have not ruptured prematurely, and rupture of the membranes is not the only cause of uterine inertia. We agree that in every case, whether a dry or normal one, when there are indications for interference we should act upon such indications. We have all seen cases in which the patient and the baby were apparently all right, but when the membranes ruptured, the fetal heart was slow or irregular and the baby was already asphyxiated, and yet the membranes had not ruptured early. If I had had the case in which Dr. Kosmak did the cesarean section after having waited four days, I would have used a bag and waited one day longer, if necessary, as that would probably have made no difference in the outcome, and the woman would have a better prognosis for future childbearing than she now has.

Dr. Brodhead asked Dr. Kosmak if his patient had run a temperature and if her convalescence had been normal.

DR. KOSMAK.—The woman had a normal convalescence and made a good recovery.

DR. BRODHEAD.—Regarding Dr. Aranow's discussion, there are a certain number of patients who get into such a mental state that something must be done, or if the patient does not demand that something be done, her parents insist that we do something. It may be better after several days to introduce the bag for the sake of the family rather than for the patient. As to the cases seen in consultation, I cannot see why such cases should be any worse than those that we meet in our own work. If the patient has prolonged uterine inertia or a contracted pelvis she must be cared for according to the indications. I do not claim any greater experience or superior skill than is possessed by others, but I plead for noninterference, and I have endeavored to demonstrate the advantages of noninterference. I cannot tell what percentage of cases had occipitoposterior presentations, but there were only 10 such presentations that required treatment.

A number of men have asked what I mean by dry labor. I am well aware that a certain amount of fluid can come from the sac between the amnion and chorion, and yet a great loss of fluid does not occur. Taking the cases as they come, whether the membranes ruptured early or near the onset of labor, it is difficult to say just how much fluid was lost and how much remained, because the amount of fluid present varies so greatly in different cases. Some patients may lose a pint, and have lost practically all the fluid, while others may lose this amount and still have two or three pints remaining in the uterus.

One of the speakers referred to the 71 per cent of low forceps operations. The majority of these low forceps operations were done with the head on the perineum with the caput in sight.

Dr. Williams' points were well taken. It is important to try and make the

diagnosis of contracted pelvis long before labor begins; everything ought to be done to estimate correctly the size of the pelvis and that of the baby.

I am unable to take up the question of the relative length of the labors in multiparas and primiparas in the occipitoposterior cases. In this series there may have been 40 to 50 per cent in the 182 cases, but there were only 10 of these where the occipitoposterior position demanded treatment. It makes little difference whether the presentation is L. O. A. or O. P., as most of these cases rotated from the O. P. position to O. A.

Someone asked if at seven and one-half months there was premature rupture of the membranes, what I would do. I would simply wait, as occasionally one of these cases may go to term.

As to the percentage of lacerations in the series I have no idea how they compared with those in normal cases. I see no reason why one should have more lacerations in dry labor than in any other kind of labor.

I agree with Dr. Caldwell that if there are malpositions they should be corrected and that the pelvis should be carefully measured, but I do not believe in putting in a bag because the membranes have been ruptured for 24 or 48 hours or for any fixed length of time. In another series, I would probably use the bag less than I did in this one. There is too much interference (I am not referring to Dr. Caldwell) in what should be considered a normal, natural process. I may have had rare good luck, but these are the figures as they were taken in the series from private work.

NEW YORK OBSTETRICAL SOCIETY

MEETING OF NOVEMBER 13, 1923

THE PRESIDENT, DR. FRANKLIN A. DORMAN, IN THE CHAIR

DR. ROBERT L. DICKINSON presented a report of **A Case of Obstinate Diabetic Eczema of Vulva, Rapid Cure by Insulin Administration, with Return of Menstruation at Fifty**

This patient, first seen at the age of twenty-two, had one child and one miscarriage, was of a fine type, working hard, cultured, self-controlled. For ten years there was occasion for watching her urine, owing to attacks of irritable bladder that were found to be directly due to a marked endotrachelitis, a relapse coming about once in two years. Treatment has, at times, shrunken this cervix to one-half its previous diameter. The trouble only ceased recurring when the cautery tip was employed. From this frequent analysis, we know that there was no early glycosuria. When she was thirty-two sugar appeared and she was placed under the Allen treatment, with sugar-free gaps of three months at a time. One of the courses of mental healing did great things for her, and she carried her recurrent diabetes in a very unusual fashion for some seventeen years. Then, at forty-nine, vulvar irritation gradually developed and went on to a wide eczema, as large as half her palm on each side, with a raw area also below the mons. The torment was extreme. Even with diet regulated, cervix sound, leucorrhea absent, bowels regulated and self-control strong, the pruritus grew steadily worse, and was little helped by one of our best dermatologists.

At this point she entered the Presbyterian Hospital as one of Dr. Geyelin's early patients. The preliminary starvation produced a little betterment in the eczema,

but from the very first dose of insulin a phenomenal change took place—swift drying, scabbing, skin-cover, disappearance of itching. In two days progress occurred which we would call good if developed in two weeks. In seven months no return has occurred.

The menopause began at forty-five and was practically complete at forty-seven, yet at fifty, after seven months of insulin and a gain in weight of twenty pounds, the periods have returned fully and regularly during the last four months.

The Report of the Committee on the Regulation of Conception was presented by the Chairman, DR. HAROLD BAILEY, and included a summary of the answers to the questionnaire previously submitted to the members of the Society. (For original article see page 266.)

DISCUSSION

DR. ROBERT L. DICKINSON.—The Society should also be informed of the progress made on the study of the subject outside of its own committee's activity.

The general plan of the Committee on Maternal Health of New York, a voluntary organization of representative lay and medical persons, took shape on March 9, 1923 (after nearly a year of discussion with prominent members of the profession) and I was made chairman of the medical group. Typewritten copies of the program of this organization were submitted to the New York Obstetrical Society, for advice and cooperation. At this March meeting of the society a motion was made that a committee be appointed to consider the problem. Before this committee of the Society, the Committee on Maternal Health spread its proposed program and policies and procedure for criticism, and also attempted to discover whether, in the opinion of the committee, the New York Obstetrical Society should take over the clinical investigation of contraception which the Committee on Maternal Health has laid out. Four out of five of the members of your committee expressed the belief that the society was not equipped to undertake this work nor was the opening of an office and the executive labor involved a proper function for the Society. The Committee on Maternal Health held up active work in the hope that at the May meeting of the Obstetrical Society a decision could be reached, but the Society merely instructed its committee to go on with the questionnaire. Thereupon the Committee on Maternal Health began to take active steps towards securing contraceptive advice for patients legally entitled to such advice, and got into communication with a carefully selected list of clinics. In general it was found that the larger institutions could take care of their own contraceptive work, having gynecologists and obstetricians on their staff. As long as good clinical reports could be obtained from these self-contained sources the Committee on Maternal Health was satisfied. This will explain why few cases have been directly referred to gynecologic clinics.

In order to work out practical details for out-patient departments two meetings have been held between the medical members of the executive committee of the Committee on Maternal Health and the chiefs of clinics. Invitations were extended to Brooklyn Hospital, Long Island College Hospital, Mt. Sinai Hospital, N. Y. Infirmary for Women, Post Graduate Hospital, Sloane Hospital and Woman's Hospital. At these meetings it developed that the dispensaries would furnish contraceptive measures at cost; that a single source of supply which could be controlled was desired; that printed instructions were essential; that these instructions should be numbered in pads, should bear the imprint of the Committee on Maternal Health in order to show who was responsible for them, and that each should carry the name of the patient to whom prescription was given, and the signature of the

doctor prescribing. Of the three methods selected for clinical investigation two were to be started at once,—namely, the sheath and the acidulated jelly,—the cervix cups not being available. Since then certain clinics have had supplies furnished them.

The Committee on Maternal Health arranged for a study of the literature, made chiefly by Dr. Edward Preble. I have verified a large number of the abstracts and been in communication with the clinics in Europe. A member of the Committee has visited Dutch and English clinics. This considerable mass of material is now in process of condensation. It covers, be it clearly understood, the clinical, technical, professional aspects only, such as indications and contraindications, technic, efficacy, harmfulness, or harmlessness of procedures, and has nothing to do with the sociology, propaganda or nonprofessional aspects of the question.

The Committee on Maternal Health has an office, a graduate nurse as manager, and a secretary-stenographer. The Executive Committee has been faithful in its attendance of meetings and in work carried on straight through the summer. The majority of this committee is made up of medical men, to wit; an internist, a public health teacher, a gynecologist, a urologist, and the medical head of a social welfare organization. The medical members will be nominated for the executive committee by the medical group. A majority on this medical group should be members of the New York Obstetrical Society. With such majority representation in the body that decides the policies and procedures of the Committee on Maternal Health and with a special committee advising the Committee on Maternal Health this Society of ours might well feel that it could control the work of the Committee on Maternal Health. This work has been developed cautiously and along strictly clinical lines, as an attempt to investigate the gynecologic-obstetric subject which has never received the benefit of any real investigation as far as the literature and our correspondence can determine.

The Committee on Maternal Health invites members of the New York Obstetrical Society who would be interested in the work of the Committee on Maternal Health to join its medical group. This involves no financial obligation or signature to any set policy or belief, but it does involve a desire to take part in an honest and open minded study of contraception, and later of other problems bearing on fertility and sterility. We have for the present the funds necessary to carry on our investigation, and we have no purpose of letting ourselves become entangled with any propaganda or legal question. We shall strictly avoid publicity.

The object of this Committee, organized March 9th, 1923, is to conduct a study:

- (a) To determine what may be practicable and scientific in dealing with problems in the field of fertility and sterility, beginning with the problem of therapeutic prevention of conception.
- (b) To collect and examine case records in relation to the questions under consideration, and so to obtain data on the practical aspects of these subjects.
- (c) To maintain an office of record and reference, but not for treatment or professional advice.

Program.—For administrative reasons the work of the Committee is divided into two major parts; (1) that dealing with problems of sterility; (2) that dealing with problems of fertility. Until plans are more fully developed the first part of the work is confined to the bringing together of data from the literature on sterility, the study of clinical records available to the Committee, and the collection of personal opinions of experienced members of the profession. Similarly in dealing with the second part of the work, the Committee will confine itself largely for the present to a study of methods of voluntary contraception.

OUTLINE OF PROCEDURE FOR THE STUDY RELATING TO CONTRACEPTION.

(a) To accept for this special study only patients coming under the provisions of the New York State Law which permits a physician to prescribe contraceptives to cure or prevent disease.

(b) Such patients to be accepted must be referred with the diagnosis over the signature of one or more physicians of recognized standing as determined by the Executive Committee for the purpose of this study. Each physician referring such a patient will furnish a statement regarding the condition for which contraceptive advice or treatment is necessitated for the maintenance or protection of the patient's health or the saving of life.

(c) Such patients together with the case record containing the diagnosis shall be referred to a clinic of recognized standing whose staff will be responsible for administering appropriate therapeutic treatment for the prevention of conception. Such clinic will be either within the institution where the diagnosis and need for care arises, or, if necessary, in some other clinic.

(d) This Committee keeps accurate case records of all patients referred to it from, or referred by it to the clinic staffs cooperating in the study; and it will undertake follow-up work wherever such follow-up is required, for the purpose of ascertaining the extent to which advice or treatment is understood and followed; and later for ascertaining the results of the contraceptive measures employed.

(e) These case records and follow-up data will be made the basis of reports which will be released by the Executive Committee to the medical profession only through the recognized medical channels, (i. e., before medical societies and in medical publications) after approval by the medical group.

The need for this work was determined by conference among individuals familiar with the programs of national medical and public health organizations. A number of prominent men and women interested in public welfare were interviewed. The net result was that no existing organizations were found whose activities could readily be arranged to include at this time the promotion of this project, either because their directors were unwilling to undertake the work or believed the fundamental scientific facts were not yet available on which they were willing to act. The view was generally expressed, however, that something ought to be done,—something tangible in the way of proving what is practicable, needed and in full accord with the best interests of society and of family life.

This organization has no plans at present for alliance or affiliation with any other existing organization. Being a strictly medical and public health project, and its medical policies being outlined and controlled by physicians of recognized standing, it will strictly avoid general publicity.

Organization.—The Executive Committee is composed of the Chairmen of the following groups, and three physicians at large:

- (1) A medical group to pass on all medical policies, personnel and procedures.
- (2) A legal group to pass on legal matters and the legality of all proposed actions.
- (3) A group of lay members responsible for financing the budget and accounting for expenditures.
- (4) A group of public health and practicing nurses to pass on nursing and follow-up service matters.
- (5) A group of social workers to advise and cooperate in all phases of the study related to social work.
- (6) A group of individuals especially informed regarding the views, policies and activities of national agencies and other organizations interested in the work of this Committee.

This Executive Committee of nine is responsible to the entire body of members for the carrying out of this study, appoints the office executive and other members of the staff, and governs all the activities and expenditures of the organization. This Committee has power to enlarge its membership by adding the chairmen of any new groups which may be desirable and conversely to reduce its number as experience may determine, it being provided, however, that there shall always be a majority of medical members on the Executive Committee.

The summary of the literature, which I propose to bring up later, shows a total of thirty-four acceptable clinical cases or studies of contraceptive measures, whether efficacious or not and whether harmless or not, in this huge mass of literature which Dr. Kosmak spoke of at the last meeting. I do not know what would show the need of a clinical study better than that. There is no general consensus of opinion.

There is a surprising amount of ignorance in this country concerning what Holland has been doing for over twenty years with the soft rubber vaginal cup. It is legal for doctors and nurses to prescribe in Holland. England has had two clinics in operation for two years and it will furnish us with statistical evidence. Both recommend the cervix cup. The Stopes clinic uses the snug fitting cervix cup, the other, or Haires clinic used the cervix cup of the Dutch and German form which distends the fornix to the limit. Our representative has only just returned after visiting these clinics. Neither the Dutch nor the English clinics have the money to carry out an adequate follow-up system and they would welcome a scientific study, including a follow-up.

DR. BYRON H. GOFF presented **An Analysis of Wound Union in 3,000 Abdominal Incisions From the Clinic of the Woman's Hospital.** The complete article will appear in the Transactions of the American College of Surgeons as part of the Standardization Program. The following is an abstract of the essential features and results of this study.

The abdominal incision is a surgical procedure upon which the vast majority of surgeons are in accord, both as to the methods of making and the methods of closing the wound. The incisions of both upper and lower abdomen have become classical, while the simple method of closing the abdominal wall in layers by means of an absorbable suture material, reenforced by removable tension sutures of a non-absorbable material, has been widely accepted as the method of choice. It may be said, therefore, that the methods employed at the present time, both in the making and in the closing of the abdominal incision, have been standardized.

In view of the fact that there is such widespread satisfaction with the standard technic employed in this procedure it is natural to assume that its acceptance has been based upon a sound knowledge of the supposedly superior results which follow its application. A perusal of the rather extensive literature on the subject promptly convinces one of the fallacy of any such assumption, for in no instance has a writer offered convincing proof, in the form of a result study, of its superiority over less widely practiced methods.

Bearing in mind, therefore, that the methods, which are now standard, have been accepted largely on theory, it might, perhaps, be of interest to subject these methods to at least a study of immediate results with the following objects in view:

1. To establish a classification of wound union in such incisions.
2. To learn the actual incidence of faulty union in abdominal incisions.

3. To determine the maximum allowable incidence of faulty union in abdominal incisions.

4. To compare the immediate results following the different methods employed, especially in the closure of the wound.

Conditions at the Woman's Hospital have been remarkably favorable for such a study, since all of the members of both attending and junior attending staffs operate under practically identical conditions upon very similar classes of cases. Each member of the staff enjoys the same operating facilities, the advantages of carefully given anesthetics by a staff of professional anesthetists and competent assistance by a well organized house staff. The preoperative preparation, which consists of a careful cleansing of the shaved abdomen with soap, ether and alcohol, followed by a double application of tincture of iodine, is the same in all cases, while the wound in every case is thoroughly protected by an appropriate gauze or towel protection. The postoperative care of the abdominal wound is practically the same for each member of the staff. All materials which come in contact with the field of operation are subjected to weekly bacteriologic examinations. Finally, there has been in operation for the past four and a half years a definite method of recording wound union in abdominal incisions. Obviously, under such conditions, comparisons can be fairly made. Before entering upon a study of wound union in abdominal incisions it was essential that they be classified according to the conditions present at the time of operation. All abdominal incisions included in this review have, therefore, been divided into two classes as follows: (1) Wounds clean at the time of operation; (2) Wounds contaminated at the time of operation.

The following classification of wound union, which takes into consideration not only infection as a cause of faulty wound union, but all other causes as well, has been developed and adopted as the standard classification for the Woman's Hospital:

Class A.—Wounds Which Unite by Primary Union. Any break in the union of a wound excludes it from *Class A*. Any discharge of blood, serum or fatty material which occurs after the tenth day excludes a wound from *Class A*.

Class B.—Wounds Which Do Not Unite by Primary Union Because of Minor Defects such as: slight infection; slight degree of fat necrosis; small hematoma; slight stitch hole infection which involves the line of union of the wound; collection of serum discharged after the tenth day; slight separation of the tissues; slight degree of pressure necrosis, cigarette or tube drain following the removal of which the wound heals promptly by granulation without infection; cigarette or tube drain plus slight infection about the drainage tract; foreign body (unabsorbed suture material etc.), following the removal of which the wound heals promptly by granulation with or without slight infection.

No case which has been detained in the hospital one or more days because of the condition of the wound is to be placed in *Class B*.

Class C.—Wounds Which Do Not Unite By Primary Union Because of Major Defects such as: extensive infection; marked degree of fat necrosis; large hematoma; extensive stitch hole infection which involves the line of union of the wound; wide separation of the tissues, with or without partial evisceration, which results in prolonged healing by granulation with or without infection; marked degree of pressure necrosis; cigarette or tube drain, following the removal of which the drainage tract heals by prolonged granulation without infection; cigarette or tube drain plus extensive infection about the drainage tract; foreign body (unabsorbed suture material etc.), causing a sinus along which there is prolonged granulation or infection; intestinoabdominal or vesicoabdominal fistula.

All cases which have been detained in the hospital one or more days because of the condition of the wound are to be placed in *Class C*. Small rubber tissue or silk-worm gut drains placed in fat of the abdominal wall are not to be considered causes of faulty union.

The present analysis covers 3000 abdominal incisions made and closed by nine members of the attending and junior attending staffs of the Woman's Hospital. Of these 2755 incisions have been classified as clean, while 245 incisions have been classified as contaminated at the time of operation. The procedures performed through these incisions have been largely gynecologic with an occasional operation on the appendix or gall-bladder, or for some type of hernia. Mammary and kidney incisions have been excluded. The vast majority of incisions have been longitudinal median ones, the remainder have been transverse suprapubic, right rectus, McBurney or inguinal. With the exception of a very small number of cases, all of the incisions have been of the intermuscular type.

Two widely different methods of wound closure have been employed. In one the abdominal wall has been closed in layers by catgut sutures, reenforced by removable tension sutures of silk or silkworm gut; in the other the closure has been accomplished by means of removable silk sutures in all layers excepting the peritoneum. The former method is one with which all surgeons are familiar, while the latter method is unique.

In detail the method is as follows: The peritoneum, transversalis fascia and posterior sheath of the rectus muscle are closed by a continuous suture of plain catgut. The rectus muscle is not sutured. The anterior sheath of the rectus muscle is closed by a continuous mattress suture of prepared silk, both ends of which are carried through the fatty layer and skin to the surface on one side of the incision at the angles of the wound (suture 1).

The deep layer of the superficial fascia of the abdominal wall is closed by a continuous mattress suture of prepared silk, the ends of which are passed through the fatty tissue and skin to the surface 1 cm. beyond and in the line of the wound (suture 2).

The skin is closed by a subcuticular continuous suture of prepared silk, the ends of which are passed through the skin to the surface on the side of the wound opposite that upon which the deepest suture emerged (suture 3).

When tightening the sutures it is important not to pull them backward and forward after they have been placed, but to allow them to remain stationary, as there is a certain cohesion between tissues and suture material which assures an ideal approximation until union is complete.

In tying the sutures, suture No. 1 is tied by a bow-knot to suture No. 3 over a gauze bolster at the lower angle of the wound. The other ends of the same sutures are tied together in a similar manner at the upper angle of the incision. The ends of suture No. 2 should be at least two inches each in length and should not be tied.

On the tenth postoperative day the bow-knot at the lower angle of the incision is untied and the bolster removed. A small amount of tincture of iodine is allowed to run into the suture tracts, the sutures are iodinated near the skin and then cut beneath the surface of the skin. At this time the upper ends of the sutures are not disturbed nor is there any attempt to remove any of them. On the twelfth day the upper bow-knot is untied and a gentle attempt made to withdraw all three sutures, the skin suture (No. 3) first, the suture in the deep layer of the superficial fascia (No. 2) next, and finally the suture in the anterior sheath of the rectus (No. 1).

TABLE I

INCIDENCE OF INFECTION IN 2755 CLEAN ABDOMINAL INCISIONS

	EXTENSIVE INFECTIONS	SLIGHT INFECTIONS
	CLASS C.	CLASS B.
1645 Incisions Closed by Absorbable Sutures	4.7%	5.3%
1110 Incisions Closed by Nonabsorbable Sutures	2.1%	1.9%

TABLE II

INCIDENCE OF INFECTION IN 245 CONTAMINATED ABDOMINAL INCISIONS

	EXTENSIVE INFECTIONS	SLIGHT INFECTIONS	DRAINAGE EXTENSIVE INFECTION	DRAINAGE SLIGHT INFECTION
	CLASS C.	CLASS B.	CLASS C.	CLASS B.
158 Incisions Closed by Absorbable Sutures	8.9%	4.4%	19.6%	8.2%
87 Incisions Closed by Nonabsorbable Sutures	9.1%	3.4%	17.2%	8.0%

If the removal of any of the sutures is found to be difficult, a small artery clamp is placed on the ends to prevent retraction beneath the skin and wrapped in the dressing until a second attempt is made the following day. The second or third attempt results in easy removal, if the sutures have been properly placed at the time of closure.

There is but a single objection to the method, and that not a serious one, namely, difficult removal if the suture has not been properly placed. If perchance a part of a suture should be left permanently in the tissues through breakage at the time of removal no harm has been done. In this connection it is important to bear in mind the fact that surgeons of wide experience bury silk sutures in the sheath of the rectus with no intention of removing them. In no case in the series studied has it been necessary to reopen the wound for the removal of a suture broken in removal.

Of the 2755 incisions classified as clean, 1645 have been closed by the conventional catgut method, while 1110 have been closed by the removable silk suture method. Of the 245 incisions classified as contaminated at the time of operation, 158 were closed by catgut and 87 closed by removable silk sutures.

DISCUSSION

DR. GEORGE G. WARD.—I am proud of the fact that the Woman's Hospital has been able to present such an example of the value of an end-result study. We are studying our end-results in our work in the more thorough way that has been advocated by Dr. Codman, of Boston. It is due to Dr. Codman's teachings that the surgical conscience has been awakened. I hold that we should audit our surgical results just as our financial books are audited.

I think this work of Dr. Goff's deserves a great deal of credit. It was a long, tedious task. The value of this work, or of any study that is made of operative results is entirely dependent upon carefully taken histories and accurate records. If you have no accurate records you cannot make deductions of value from what you

have recorded. That, I think, we owe largely to the movement of hospital standardization inaugurated by the College of Surgeons.

DR. HERMANN GRAD.—I am a firm believer in wound closure with non-absorbable material and I have used it for a good many years. In the statistics Dr. Goff showed that my incidence of infection with catgut closure was 8 per cent, and then with nonabsorbable material it dropped to 5 per cent. Then he mentioned the fact that I broke some of the stitches and I had some legal trouble with it and I changed and went back, not to catgut closure entirely, but to silkworm gut and catgut in the skin. As a matter of fact I had silkworm gut closure, except that I used catgut in the peritoneum and the skin, and immediately my percentage rose to exactly what it was when I used catgut alone. In other words, that little piece of catgut that I put in the skin gave me a 3 per cent higher incidence. It shows very conclusively that catgut is at the bottom of it.

There is one thing that I cannot agree with, and that is the classification of the wounds. Dr. Goff says that whenever a drain is used he considers it a contaminated wound. I know that with drainage one can have primary union in infected, contaminated wounds just as one can have in clean wounds. I think there should be a third classification in those cases. For instance, if you take out an appendix and leave a drain, the wound heals by primary union down to the drainage tract. I consider that primary union in spite of the fact that there was a drain used. Dr. Goff considers two classes only, the clean and the contaminated wounds.

DR. GEORGE W. KOSMAK.—I feel that this expression of unrestrained approval for the nonabsorbable suture should not go on record without a word of objection. It seems to me that there are other factors which enter into successful wound closure aside from the suture material that is used, and I believe that one of these, to which not sufficient importance is attached, is trauma. If a surgeon gets out of the habit of using metal retractors except where definitely needed, and gets out of the habit of handling the wound edges roughly, he will get very much better results than the man who insists on keeping the wound edges spread far apart with a hard unyielding metal retractor.

Another point that should enter into the discussion, is the site of the wound. I personally have found much better wound closures to have followed the use of the transverse suprapubic incision and I use it whenever possible. I find that the wounds heal most kindly, and with a great deal less disturbance than with the more or less vertical incisions.

I do not believe that we ought to condemn entirely catgut closure. I for one, basing my remarks, of course, on personal experience only, feel that it is just as safe, if not safer, than the form of closure which requires the subsequent removal of sutures.

In my own work, as I say, I use the transverse incision whenever possible, going through skin and fascia, and then making a vertical incision through the peritoneum. That criss-cross incision seals the abdominal wound and it does not really make very much difference what form of material you use to bring the edges together. Remember, also, that primary wound closure does not depend entirely on the suture material, but it depends on the accurate apposition of the layers and simply keeps them in place long enough for Nature to complete the union. It seems to me that catgut, used in the smallest possible size, does that very effectually, and as far as the skin is concerned, you can do as well with the ordinary Michel clips if you are in a hurry, or sterilized adhesive straps, as you can with a needle and thread. So that I personally feel that we ought not to go on record here as entirely condemning the absorbable method of wound closure, because I am sure that I echo

the sentiments of others when I state that it can be successfully used, and that the failure in many of these cases is not due to the material that is used for the closure, but rather to the trauma which the wound edges have sustained during the process of operation.

DR. R. M. RAWLS.—As one of the operators whose end-results were reported, I would add that formerly a certain amount of infection was not only expected but did occur, but since adopting nonabsorbable sutures infection even in contaminated cases is unusual. Formerly I considered the technic of closure of the abdominal wound as one of the most important steps in the operation, but with this method the interne gets equally as good end-results.

I was a little loath to adopt this procedure, but by its use my incidence of infection decreased surprisingly. This was not due to any other change in technic for I am just as traumatic now as formerly. Furthermore, it is just as applicable to the transverse incision as to the median, and to prevent infection in the former is most desirable, for with the absorbable sutures some of my most severe infections occurred in the transverse incisions.

I agree with Dr. Goff in his classification of wounds for I cannot conceive of a drained wound healing by primary union. It is true that there may not be any appreciable infection from the drain, but the wound heals in part by granulation and therefore should not be classified as primary union.

DR. HERMANN GRAD.—May I just call attention to one point? If one palpates a healed abdominal wound which has been closed with nonabsorbable material and one which has been closed with catgut, one appreciates a great difference. A wound that is closed with catgut is indurated and hard, and not as yielding to the touch as one which is closed with nonabsorbable material. Around each catgut knot there is a certain collection of leucocyte and that makes the wound hard and unyielding.

DR. HIRAM N. VINEBERG.—In order to make this study of greater value to us it would have to be continued and the end-results noted two or three years hence from the standpoint of the incidence of hernia. I have my doubts whether with a wound closed in this manner, where the line of union is soft, the union is going to remain as firm as one with a firm, hard ridge through it. With the latter I am confident there is not going to be a hernia.

DR. LEROY BROWN.—I think the answer to Dr. Kosmak's point and also to that of Dr. Vineberg's is this. The same surgeons (eight of them) who were using absorbable sutures transfer to nonabsorbable sutures and their primary unions increase at once, or their infected wounds decrease at once, at least one-half of what they were before. The same amount of trauma of which Dr. Kosmak speaks existed with the same surgeons. Therefore, there is only one translation to it and that is the mere use of absorbable sutures.

Now, from the standpoint of the follow-up: When patients come back to the follow-up clinic we recognize whether their wounds are firm or not. In no instance, as far as my memory serves me, have I seen a single one of the wounds brought together by this "three-stitch-closure method" showing a separation of the fascia. My personal experience was that in using buried sutures, a certain percentage of infected wounds resulted. It was unsatisfactory. It was with considerable hesitation, because I did not like the idea of having to take out sutures at the end of twelve days, that I adopted the nonabsorbable suture. After doing so, however, the percentage of infections dropped in marked degree and gave me more satisfactory end-results. I think where we can apply this suture to wounds, it is by

all odds the suture, or wound closure, that gives us the best promise of perfect wound healing.

DR. DOUGAL BISSELL.—Experience has convinced me that the method of closure described by Dr. Goff this evening has many advantages over the methods I have previously used.

Theoretically I have always accepted the principle that the less Nature had to contend with in the peritoneal cavity, or in the abdominal wound, the less disturbing would be the patient's convalescence. I always applied this principle to my intraabdominal work and therefore used only plain catgut of the smallest sizes, when my colleagues were using large plain gut, chromic gut and silk. One of my colleagues, Dr. Charles G. Childs, carried this principle to its logical conclusion, and sometime before 1913 insisted upon the use of removable sutures on closing the abdominal wound. I would have adopted his suggestion sooner but, having had several disturbing mishaps from imperfect silkworm gut used in suspending the kidney, I hesitated to apply the removable suture in any form, when the resistance to removal (as in the abdominal wound) was greater than when encircling the kidney for its suspension and fixation. However, after substituting the B & B prepared silk for silkworm gut and finding that it could be depended upon and easily removed, I adopted its use in closing all abdominal wounds.

I feel personally indebted to Dr. Childs for bringing this principle to the attention of the profession, and it may be of interest to you to know that in a paper published by him in 1913, his statistics show even better results with removable sutures than we are now getting.

His comparative study of wound closure is as follows: plain catgut, primary union, 78 per cent; linen thread or silk, presumably buried, 80 per cent; removable silkworm gut, 96 per cent; silver wire 100 per cent. May it not be desirable to follow him further and use silver wire, instead of the prepared silk which was used in the series of cases of removable sutures presented by Dr. Goff? Silver wire was the only reliable suture in the days before aseptic and antiseptic surgery. It is a protecting material as its contact with the tissues forms an albuminate of silver.

DR. GOFF, (closing).—In regard to Dr. Vineberg's remarks concerning the likelihood of postoperative hernia following the removable silk suture method of closure, I must admit that we do not know what the incidence of that complication is, since we have not had an opportunity to make a follow-up study on that point.

In view of the fact that infection and premature absorption of catgut sutures are two very important causes of postoperative hernia, it seems to me that such hernias will occur less frequently following the silk closure, because through its use the incidence of infection is lowered and the tissues are surely approximated until union is complete.

Apropos the premature absorption of catgut I have seen five cases which had been closed by means of 20 day chromic gut sutures, in which the entire wound reopened within ten days after operation, with no sign of infection present. At the time of reclosure, the original catgut sutures were found to have given way through premature absorption. The knots and a few frayed strands of catgut were all that remained of the original suture material. The tensile strength of any form of catgut is practically destroyed before the tenth day, and in certain cases the union is not reliable at that time. With silk sutures no such accident has happened.

Department of Reviews and Abstracts

CONDUCTED BY HUGO EHRENFEST, M.D., ASSOCIATE EDITOR

Collective Review

THE KIELLAND FORCEPS

By J. P. GREENHILL, B.S., M.D., CHICAGO, ILL.

IN May, 1915, Christian Kielland of Norway presented a new type of forceps before the Munich Gynecological Society. Since that time a large number of papers have been written and many discussions have arisen regarding the forceps. The instrument has been hailed by some as the greatest advance in obstetrics in recent years while others have condemned it. The weight of evidence, however, is clearly in favor of the new instrument which differs from the ordinary type of forceps in the following respects: It is somewhat lighter in structure, its lock is not fixed but is sliding in character, and it has only an extremely small pelvic curve. The shape of each blade resembles that of a German bayonet. (See figures.)

The blades of the new forceps can always be applied to the biparietal diameter of the fetal head, hence these forceps are particularly adapted to the cases where the head is high and the sagittal suture runs transversely. For such cases the axis-traction forceps were devised many years ago but the disadvantages of this instrument are many. Kielland believes that the difficulties encountered with the axis-traction forceps are not ascribable to the pelvic contraction but to the incomplete rotation of the head. In most of the cases where the head is high in the pelvis, when the axis-traction or the ordinary forceps are applied, one blade comes to lie over the occiput and the other over the brow and face. The blades do not fit the head properly. Only the tips really touch the child's head while the remaining portion stands away from the head. Because of this, the circumference of the object of expulsion is enlarged and extensive lacerations result. Not only extraction but also rotation is made very difficult by such an application. When rotation is performed the vaginal mucosa moves with the forceps and suffers much damage. Difficulty in rotation may occur not only when the head is in high, but also in deep transverse arrest.

To overcome these difficulties, Kielland devised the new type of forceps and also a new method of applying these forceps. He lays down the following rules for the application of his forceps to a head which lies in the transverse diameter. (Kielland does not give advice on the use of his forceps in cases where the occiput is anterior.)

Before applying the forceps a correct diagnosis must be made regarding the station of the head, the direction of the sagittal suture and the position of the large and small fontanels. Before applying the forceps they should be held in front of the vulva in the position they are to assume in the pelvis. The slight pelvic curve of the instrument is to face the occiput. The blade which is to lie anteriorly and which, therefore, is to lie between the symphysis and the fetal head must always be inserted first. Two fingers of one hand are placed on the head under the anterior lip of the cervix. The other hand inserts the anterior blade with the concave surface of the cephalic curve facing the symphysis, horizontally along the fingers in the vagina until the tip has passed the symphysis. The handle is then depressed and the blade carefully pushed up into the uterine cavity. When high enough, it is rotated on its long axis 180 degrees, in the direction of the pelvic curve of the blade. To avoid confusion there is on each

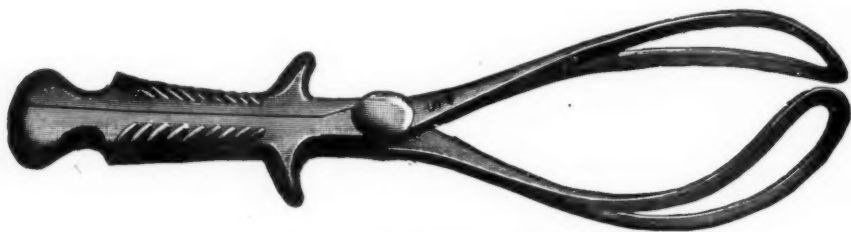


Fig. 1.—Naegele forceps. Front view.

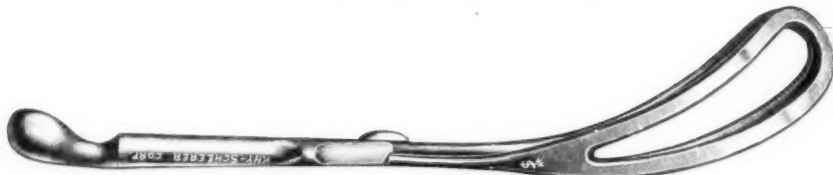


Fig. 2.—Naegele forceps. Side view.

handle a small knob which indicates the direction in which rotation is to take place. To apply the posterior blade, two fingers are inserted to locate the cervix and the blade is inserted either in front of, or slightly to one side of, the promontory and to that side of the first blade which will favor locking without the necessity of crossing the blades. When the blades are locked, the forceps grasp the head symmetrically in the biparietal and bimalar diameters. The introduction of the blades, especially the anterior one, is usually accomplished with amazing ease and always, according to Kielland, without injury. At autopsy on two women delivered with the new forceps no injury to the uterus was found. Since the forceps are applied symmetrically they do not tend to slip and rotation of the fetal head can be accomplished without injury. These forceps, however, should not be used to overcome definite cephalopelvic disproportion or a rigid perineum. When there is resistance to the insertion or to rotation of the anterior blade the latter should not be forced into place but should be inserted as the old forceps are, that is, the blade should be made to wander into place. It may be difficult to insert the posterior blade as high as the anterior one, especially in contracted pelvis but this does not

cause trouble; for these forceps may be locked even when the blades have not been inserted to the same height. During the first traction the blades become symmetrical.

After being locked, the blades lie in the anteroposterior diameter of the pelvis. Traction should be made in the direction of the handles more posteriorly than anteriorly. When this is done the head rotates spontaneously. One may with the forceps completely rotate the head anteriorly in the pelvic cavity before making traction. Rotation should be accomplished without simultaneous traction. At the outlet the handles should not be elevated as one is tempted to do because of training with the old forceps. The application of these forceps for brow and face presentations is the same as for occiput presentations. Since the chin is the point of direction in face presentations, the pelvic curve of the forceps must be made to look toward the chin.

The advantages of the new forceps and the new method of applying them are, according to the inventor, first the ease with which the forceps are applied regardless of the station of the head and the direction of the sagittal suture. The head is not displaced when the blades are inserted. The forceps cannot possibly slip off the head and the



Fig. 3.—Kielland forceps. Front view.



Fig. 4.—Kielland forceps. Side view.

grasp is harmless to the child. The application is not only symmetrical but also ideal and remains unchanged during traction, which can be made in the direction of the handles. The blades are applied to that part of the child's head which can best endure pressure, namely the cheeks and the underlying bones. There is no pressure on the skull, orbit, brow, nose, neck or facial nerve as so often occurs when the old forceps are applied to an unrotated head. Because the blades fit the head exactly, this instrument is safe for rotation purposes. Likewise these forceps may be used when the cervix is incompletely dilated with much less damage than the classic forceps. Finally, due to the symmetrical application of the blades on the head, extraction is attended with much less force than is necessary with the other types of forceps.

From 1908 to 1915 Kielland with his forceps delivered 352 women, of which 197 were primiparas. In 302 cases the sagittal suture was in, or almost in, the transverse diameter. There were 5 brow and 6 face presentations. One mother died but she had had an infection before delivery. There was not a single third degree laceration or tear of the bladder or anterior vaginal wall. One child was stillborn

(premature), two children died soon after delivery (one brow and one face in primiparas), and two died on the third and fourth day, respectively. (Their mothers had contracted pelves.) The fetal mortality, therefore, was 1.4 per cent.

The first to seriously undertake an investigation of the Kielland forceps was Saenger in Doederlein's clinic in Munich. In 1916 he reported the results of his experience in 42 cases, among which were 32 primiparas and two with deflection attitudes (one face and one brow presentation). One mother died of eclampsia and on postmortem examination the uterus showed no evidence of injury. One child was born dead, but no heart tones could be heard before delivery. A second child died of hemorrhage from the cord one and a half hours after delivery. Autopsies on both failed to show intracranial lesions. Saenger applied the forceps as Kielland advised and experienced no difficulty except in one case. He was very enthusiastic about the forceps and claimed that not only was delivery much easier than with the old forceps, but both time and anesthesia were saved because there was less damage for repair.

Hamm in 1917 in a paper on the comparison of the forceps as an instrument of rotation and the method of combined rotation of the fetus into an occiput presentation as advocated by Fehling, advises in anomalies of presentation and attitude where the head is not engaged, that the combined method of rotation be performed. If this procedure fails the Kielland forceps should be applied, but they should be used by specialists only.

In the same year Rosenfeld demonstrated the new forceps before the Obstetrical and Gynecological Society of Vienna and recommended them very highly. In the discussion which followed the demonstration, Schauta said that the rotation of the anterior blade in the uterine cavity was dangerous and was only to be done by a master in obstetrics. He said that this procedure alone was sufficient to condemn the new instrument since forceps are to be used by the general practitioner. The only use he could see for this instrument was in cases of high transverse arrest in face presentations. Halban claimed the Kielland method of inserting the anterior blade was anatomically correct and should be tried a sufficient number of times before it was condemned.

In 1919 Küster reported 19 cases in which the Kielland forceps had been tried. Later, before the Breslau Gynecological Society, he reported the results in 22 cases. So enthusiastic was he that he acclaimed the new type of forceps as the most important advance in instrumental obstetrics in recent years. Among his cases were one forehead, one brow and one face presentation. Küster advised removal of the old type of forceps and the axis-traction forceps from the hands of practitioners and their replacement by the Kielland instrument. In the discussion of the second paper, L. Fraenkel spoke favorably of the new instrument but preferred the forceps he himself devised. Küstner could see no danger in the use of the Kielland forceps but urged that they be used by specialists only.

In June, 1919, Stroeder demonstrated the new forceps before the Hamburg Obstetrical Society and praised them very highly. At about the same time, Puppel proclaimed the advantages of the instrument

before the Medical Society of Mainz and said it was the obstetric forceps of the future.

Five years after his first presentation, Kielland again spoke before the Munich Gynecological Society. At this time Saenger reported that the total number of cases in which the Kielland forceps had been used was 60. There was no maternal death. The fetal mortality was 3.8 per cent but no baby showed intracranial hemorrhage. Since 1915 Saenger has used no forceps other than the Kielland, and recommends them not only for the specialist in obstetrics but also for the general practitioner. In the discussion, Doederlein confirmed what Saenger said about the results in his clinic. (However in June, 1923, I heard Doederlein say that as far as his own experience with the Kielland forceps was concerned he was not prepared to venture a definite opinion.) Mueller pointed out that the Walcher position is a valuable adjunct to the use of the new instrument and Adler maintained that its employment made no technical, but only diagnostic, exactions from the obstetrician.

Stoeckel in his Textbook of Obstetrics (1920) mentions the Kielland forceps but does not feel there has been sufficient experience to permit the general practitioner to use them.

In November, 1920, Meumann spoke before the Leipzig Obstetrical and Gynecological Society on the subject of high forceps in contracted pelves. He reported that in Zweifel's clinic during the previous two years the Naegele forceps had been given up almost entirely in favor of the Kielland forceps in cases where the head was high. The results were very favorable. Only one child died; but an attempt had been made to deliver this baby with the Naegele forceps before the new forceps were applied. Meumann believes the new instrument is the best there is for high heads, but emphasizes that an accurate diagnosis is necessary before applying the forceps. In threatened rupture of the uterus the typical Kielland application should not be used, but the blades should be made to wander into place. Meumann also believes that before cesarean section is performed an attempt may be made to extract the child with the new forceps without harm to the child. Only specialists should use these forceps. Klien, in discussing this paper, expressed the belief that for high heads the Kielland forceps places all other forceps in the shade. Hodiesne saw advantage of the new instrument in flat pelves because it diminishes the biparietal diameter of the baby's head. Schweitzer told of the very good results obtained with these forceps in cases where perforation had been the only other alternative.

Sachs called attention to what he believed to be a source of danger in the use of the Kielland forceps. He had been getting very good results with the new forceps but in one case where the head was high the cord was included in the grasp of the forceps. A quick delivery saved the child. Such an occurrence, Sachs believes, cannot always be prevented when using the Kielland forceps; hence the heart tones should be carefully controlled after the application of the forceps.

In 1921, Hoffmann reported his results in six cases and was very enthusiastic about the new instrument. He had also used it in the low cervical cesarean section with excellent results. One patient, who was delivered with the Kielland forceps because of pneumonia, died of the pneumonia and autopsy showed the uterus to be intact.

In his monograph on Diagnostic and Therapeutic Mistakes in Labor, and Their Prevention (1921), Fehling warns against the use of the Kielland forceps which he claims are difficult to apply and will do more harm than good. However, Fehling evidently had not been using the Kielland forceps for he speaks of a three-bladed instrument whereas the Kielland instrument has only two blades. In a review of this book Loeser emphasizes Fehling's objection to the Kielland forceps without correcting Fehling's error regarding the number of blades.

Berecz reported the results obtained with the Kielland forceps in Toth's clinic in Budapest. The forceps were used in 26 cases and were applied in the way the old forceps are applied. No mothers were lost and only one baby was born dead, but its heart tones could not be heard before delivery.

In 1921, Riediger presented his results in 29 cases, in six of which the head was floating at the time of delivery. So well pleased was Riediger that he believes the Kielland forceps not only replace the classic forceps but they also extend the field for the use of forceps. In the discussion of this paper, Benthin claimed that the Kielland forceps were better than the old forceps only when the head was high. Fink reported success in three cases where the head was not engaged but in one case he had to replace the Kielland forceps by the Naegele. Schroeder heartily recommended the new instrument as he never had any failures with it.

Mayer related very successful results with the Kielland forceps in 13 instances where the head was above the spines. All the children were born alive, but in two cases there were extensive tears in the vaginal mucosa. This, Mayer emphasizes, might have resulted from the use of the classic forceps. Mayer believes that the fear of rotating the anterior blade in the uterus is unfounded. He advocates the use of these forceps for specialists only and where the pelvis is normal, especially when the head is high. If, however, forceps are applied in contracted pelvis more can be expected from the Kielland instrument than from the old type of forceps. When the outlet is contracted, the new forceps are definitely superior. There should be no extension of the indications for the use of forceps, but the Kielland forceps can be used very successfully in anomalies of flexion and station of the fetal head, cases where the classic forceps are unsatisfactory. In discussing this paper, Kupferberg said that he had obtained very good results with the new forceps in 40 deliveries and that he uses the new instrument for all types of cases. He believes it should be the only type of forceps extraction taught to students. Fehling opposed the new instrument because it widened the field for forceps operations. He believes it should be used only in hospitals. Opitz said he had not found it necessary to use the new forceps and feared that because of them, high forceps operations would again become frequent. He agreed with Schauta that the only indication for the Kielland forceps was a face presentation where the head was high.

In 1922 at the biannual meeting of the German Gynecological Society held in Innsbruck there was quite a discussion on the Kielland forceps. Rosenfeld presented the results of a study of 135 cases in which the Kielland forceps had been used. The Kielland application

was employed and delivery in nearly all the cases was very easily accomplished and without any damage. All the babies were born alive, but four died postpartum (3 per cent). No baby or mother showed marked injury. Rosenfeld also used the new forceps to hold the head in three cases where perforation was necessary, and then extracted the perforated heads very easily without a cranioclast. He has used the new instrument for five years and believes it should be in the hands of every obstetrician and its application should be taught in every clinic.

A second paper read before the German Gynecological Society on this subject was by Krull, who reported the results in 93 cases. Sixty-three were his own, while 24 were those of his former assistants, Tittel and Rössler. In almost half the cases the pelvis was contracted. The typical application was used in most cases and in one case the cord prolapsed as the anterior blade was rotated. The child was delivered alive. One woman died of eclampsia and at autopsy the uterus showed no injury. Krull believes the Kielland forceps are very good for purposes of rotation and will pull the head through the pelvis with little damage. The instrument supplements the old forceps but should be used by specialists only.

A third paper read at the Innsbruck meeting was by Hoffmann, whose experience is based upon 116 cases and who believes the Kielland forceps render delivery easy, particularly in flat pelvis where the head is high. Hoffmann believes the new forceps diminish the biparietal diameter, and hence decrease a cephalopelvic disproportion. The application of the anterior blade, as advocated by Kielland, is not more dangerous than ordinary version. The Kielland forceps are excellent and harmless for rotation, only one application being required even for rotation of 135 degrees; hence the Scanzoni maneuver is made unnecessary. Hoffmann believes the new forceps should be the only type of forceps taught to students. Since the introduction of the Kielland forceps in the Dortmund clinic there has never been a need for any other forceps.

Still another paper read at Innsbruck bearing on this subject was by Weinzierl. He discussed the treatment of high sagittal arrest of which he collected 18 cases from 9000 labors. Nine of the 18 cases were delivered by forceps of which seven were by means of the Kielland forceps (4 pos. pub. and 3 pos. sacr.). In only 3 of the 7 cases were the pelvis normal, and in all but one the head was movable above the inlet. In each instance the blades were easily applied to the sides of the baby's head and the head was rotated to the transverse position easily. On the pelvic floor the head was again rotated, to an anterior position. In two cases there was difficulty due to pelvic contraction. Two babies were born dead, but the other children and the mothers were uninjured. Weinzierl believes the Kielland forceps are very useful and in contracted pelvis advises their use in conjunction with symphysiotomy. In a later paper he reported two additional cases of high sagittal arrest in which the new forceps were used.

A lively discussion followed the presentation of the above four papers at the Innsbruck meeting. Eisenreich related that he successfully delivered with the Kielland forceps three patients after the Naegele forceps had failed. Hammerschlag praised the new instru-

ment but pointed out that, occasionally on insertion of the anterior blade, the head is pushed up out of the pelvis. Guggisberg insisted that the Kielland forceps were unnecessary when the head was low and that the forceps should be used only by specialists. Temesváry had used the new instrument 16 times, in 13 cases the head was high, and there was one face and one brow presentation. There was no injury to mother or child. Temesváry believes the use of this instrument should be taught to students. Puppel used the Kielland forceps five times. He claimed the instrument was somewhat difficult to apply but that rotation and extraction with these forceps were very easy. Saenger recommended that the forceps be used in cesarean sections and on the after-coming head. Zimmermann used the forceps six times but in three, because of a tendency to slip, he had to replace them with the Naegele forceps. Mayer remarked that the Kielland forceps can supplement the Naegele but not replace them entirely. It was the belief of Sellheim that a better forceps than the Naegele for normal pelvis was unnecessary, hence it was not a question of Kielland versus Naegele forceps but of Kielland versus Tarnier forceps. Sellheim obtained better results with the Naegele forceps in normal pelvis, and believes the Tarnier is better than the Kielland forceps in contracted pelvis. Stratz agreed with Sellheim that there is no need for a new instrument but he admitted he had never tried the Kielland forceps. On the other hand Baumm believes the new forceps are better than the Naegele when the head is high. Pankow also favored the Kielland instrument because it permits surprisingly easy rotation and extraction, but he wonders whether more ruptures of the perineal muscles might not result from this.

In an inaugural dissertation on the use of the Kielland forceps in Schmidlechner's clinic in Budapest, Lüps praises the new instrument very highly and believes it can be used on any head presentation regardless of its position, station or degree of flexion. He also advocates the use of the new instrument on the after-coming head. The Kielland forceps were used in seven troublesome cases but all the deliveries were easily accomplished. One mother died of eclampsia. Lüps believes the new forceps not only entirely replace the ordinary forceps but also save some babies from craniotomy. He recommends that their use be taught to students, as is being done in Toth's clinic in Budapest.

Meumann in a paper on brow and face presentations reports that in a series of seven forceps deliveries for brow presentations the only one which was easily accomplished was the one in which the Kielland forceps were used. In a series of 24 face presentations delivered instrumentally there was a fetal mortality of 50 per cent. This high mortality was due mainly to the use of the ordinary type of forceps which cannot be applied properly in these cases. The Kielland forceps on the other hand permit proper application and easy delivery. Meumann believes the use of the Kielland forceps will greatly improve the prognosis of both brow and face presentations.

In a later report by Meumann of sixty cases where the new forceps had been used, the pelvis had been contracted in forty and Meumann believes that at least twenty of the babies were saved from craniotomy by the new instrument. He emphasized that the anterior blade should be inserted only after the patient had been narcotized. In discussing

this paper Skutsch expressed fear of the Kielland application, and advocated inserting the blades as is customary with the old forceps. Thies agreed on the great value of the new forceps in certain cases but did not believe it was advantageous in face and brow presentations. He believed the forceps were too lightly constructed for cases where very forceful traction was necessary.

Bruch, who used the Kielland forceps 50 times, did not apply the anterior blade as Kielland recommended. He successfully delivered four brow presentations and one face presentation with the new instrument. In all of the 50 cases application, rotation and extraction were easy. Bruch recommends the new forceps to the general practitioner. He believes, however, that in generally contracted pelvises the Naegele forceps are better than the Kielland, because the generally contracted pelvis is too low to permit the proper application of the Kielland forceps.

In a second publication Mayer reported the use of the new forceps in 15 atypical cases where all the children were born alive. Mayer sees advantages of the Kielland forceps in three directions: namely, where there is a narrow pubic arch, where there is pelvic inlet dystocia and where there is an anomaly of cephalic flexion, (deflexion and asynclitism). The old forceps should not be used when asynclitism is present.

Zimmermann in a report of his experiences with the Kielland forceps in six cases, stated that he had three failures, and these he attributed to the weak construction of the instrument. The latter must be given a more extended trial before recommending it to the practitioner.

Mathes believes the chief advantage of the Kielland instrument is its ability to overcome bony resistance when the head is high and he cites an example.

In a paper read before the Berlin Obstetrical and Gynecological Society, v. Schubert reported the results obtained with the new forceps in Franz's clinic. Thirty patients were delivered and no mothers or babies were lost. Neither were there any severe lacerations. There were four anomalous flexion attitudes (face, brow, forehead and anterior parietal bone presentation). In one case the cord prolapsed upon insertion of the anterior blade but the child was delivered alive. Three high forceps deliveries were accomplished in three, four and two minutes respectively. v. Schubert warns against the possibility of making a false passage between the anterior lip of the cervix and the vaginal mucosa. He believes the Kielland forceps have made the Tarnier forceps obsolete and that they can be used with less danger in any case where any other type of forceps can be used. No more skill is required to use the new forceps than is necessary for the old forceps. In the discussion of this paper, Kielland said his instrument was not a universal one, and should not be used to overcome bony resistance. The new forceps do not diminish the volume of the fetal head, neither do they increase it. Carl Ruge II reported the results of twenty patients delivered with the Kielland forceps in Bumm's clinic. The results were excellent. Ruge calls the new instrument the forceps of the future and advocates their use by the general practitioner.

In the discussion of a third paper by Meumann read in Leipzig,

Zangemeister reported the first case of rupture of the uterus where the Kielland forceps were used. Sellheim claimed that applying the forceps in the anteroposterior diameter of the pelvis diminished the size of the pelvic cavity. He was opposed to recommending the new forceps to the practitioner.

In a still later paper, Meumann informs us that previous to the use of the Kielland forceps in the Leipzig clinic only 82.4 per cent of the high forceps deliveries were successful and only 60.8 per cent of the children were born alive. In the cases of high forceps where the Kielland instrument was used, 94 per cent of the babies could be delivered and 81.3 per cent of them remained alive. Slipping of the blades is impossible if the forceps grasp the fetal head properly. Meumann recommends the Kielland forceps not only for normal but also for contracted pelvis, and also for the purpose of rotation.

Frey, speaking of the results obtained in Zürich, said the new forceps were so good that since their introduction the Naegele forceps had not been used. The new instrument was used in 75 cases. Guggisberg while agreeing with Frey on the advantages of the Kielland forceps when the head was high felt that the general use of this instrument would lead to a laxity in placing indications for forceps deliveries.

Bokelmann believes that a correct model of the old forceps can accomplish everything which the Kielland instrument accomplishes. For many years in dealing with transverse arrest he has been placing the anterior blade of the ordinary forceps directly under the symphysis without making it wander, even when the head was high. This gives an anteroposterior application exactly like that with the Kielland forceps and this application is easily carried out. Bokelmann believes the new forceps are especially adapted for face and brow presentations.

A comparison of 85 high Naegele and 43 high Kielland forceps deliveries was made by Hermstein. Among those delivered with the Kielland instrument one mother, who had cardiac decompensation, died. More extensive lacerations occurred in the series of Naegele forceps deliveries. Like Sachs, Hermstein had a case where the cord fell between a forceps blade and the fetal head when the Kielland instrument was used. He comes to the conclusion that the Kielland forceps are better than the Naegele forceps when the head is high. However, for their proper use obstetric knowledge and experience are necessary and an extension of the indications for high forceps operations is not to be fostered.

Heidler analyzed 100 cases delivered with the Kielland forceps in Kermauner's clinic in Vienna. There were 79 primiparas and of these 13 were over 35 years of age. In 53 cases the head was high, and in 13 additional ones it was barely engaged. In 67 cases the anterior blade was rotated in utero. Heidler points out that difficulty in rotating the anterior blade in the uterus is a danger signal and warns one against using forceps because the pelvis is contracted or the head is too high. Among the 100 cases were three brow presentations, six cases of asynclitism and one high sagittal arrest. Failures were encountered on an after-coming head, in two contracted pelvis and in one brow presentation where the head was high. Nearly all the other cases were terminated with great ease. Of six maternal deaths

only one could be attributed to the Kielland forceps. In most of the primiparas an episiotomy had been performed; but despite this, there were extensions of episiotomy in 27 cases. Heidler, therefore, advises an extensive episiotomy before applying the Kielland forceps. A rupture of the uterus occurred in one of the patients in whom the application of the forceps was accomplished with great difficulty. Because the forceps could not be locked properly they were removed and reapplied, but again with great difficulty. Once more the blades could not be locked. Examination revealed the head to be free above the pelvic inlet. The posterior blade was removed without difficulty; but as the anterior blade was being withdrawn, resistance was met. This was forcibly overcome and the operator experienced the sensation that something had torn. To save the child, a rapid version and extraction were performed. Great difficulty was encountered in freeing the right arm and it was liberated only after fracturing the humerus. In the lower uterine segment a tear was found; so a laparotomy was performed and the uterus removed. The patient left the hospital on the twelfth day.

I feel that this accident should not be attributed to the Kielland forceps. In the first place the operator was warned twice by the extreme difficulty in applying the blades that the case was not one for forceps. Furthermore the sensation of a tear was felt, not upon the insertion but upon the removal of the anterior blade and only after much force had been used to overcome a definite resistance. To add to the *lapsus artis*, version and extraction were performed on a fullterm child in a ruptured uterus.

Heidler also reported a case of incomplete rupture of the uterus which occurred after craniotomy on a baby whose delivery had been attempted with the new forceps. There was a general fetal mortality of 9.2 per cent. From his experience Heidler believes that the Kielland instrument is a very definite advance in operative obstetrics and he considers it to be a universal forceps.

In a later article, Heidler reports 50 additional cases delivered with the Kielland forceps. Of these, 32 were high forceps and two were face presentations. The fetal mortality was 12.2 per cent and there was one maternal death which the author does not attribute to the forceps. Another case of laceration of the lower uterine segment occurred and here also there was a spontaneous recovery. While Heidler praises the new forceps very highly, he does not believe they cause less damage to the maternal soft parts.

In what he claims to be a critical review of the Kielland forceps based on the statistical reports of 32 authors, Fink condemns the new instrument. He maintains that the belief in the safety of the forceps has been shattered by Zangemeister's report of a case of rupture of the uterus. In his own clinic he saw at autopsy, two cases of injury to the posterior cervical wall. One of these patients had died of eclampsia. In the other, the author admits that the injury to the cervix was in a place where the head had caused necrosis by very long continued pressure. A similar necrotic area from pressure was found in the anterior cervical wall. Despite this, Fink attributes the injury and the death to the Kielland forceps. In one case, on insertion of the anterior blade, the head was pushed upward necessitating delivery by version and extraction. Fink had one case where the

forceps showed a tendency to slip and mentions a few other authors who had similar experiences. He also questions whether delivery can always be accomplished even if the forceps are properly applied, and cites three failures. In his cases 70 per cent suffered damage to the soft parts. He also challenges the supposed ease with which delivery can be accomplished with the new forceps and tells of one case where three individuals exhausted their strength in an attempt to deliver a patient. This patient delivered spontaneously a few hours later. He tells of another of his cases where two operators kept up a relay in an attempt to pull the head of a baby which weighed 4150 gm. (nine pounds two ounces) through the inlet into the pelvic cavity. (Such individuals evidently do not know the expression, "*Non vi, sed arte.*")

Twenty-four of Fink's 54 cases were high forceps deliveries. In the cases with normal pelves, the deliveries were accomplished with surprising ease and rapidity. In cases of cephalopelvic disproportion, Fink says, extraction may be so difficult that the strength of one individual may not be sufficient. Fink encountered lacerations of the vagina in a few cases in which he used the instrument for rotation purposes. However, he tells of a very easy rotation with the new forceps in a contracted pelvis where the Naegele forceps had failed. He does not believe there has been sufficient experience to permit an opinion on the use of the Kielland forceps in cases of cephalic deflexion (forehead 45 cases, brow 15 cases, face 15 cases).

Fink maintains that the Kielland forceps are unreliable, and has collected 15 cases from literature where delivery was accomplished with the Naegele and Tarnier forceps after the new forceps had failed. (Krull, Thies, Bruch, Mayer, Zimmermann, Sellheim, Baumm, Küster and Fink).

In Fink's series there were six maternal deaths but only two of these he attributes to the Kielland forceps. One of the latter patients died of sepsis; but she had a temperature of 101.6° before delivery and had had many vaginal examinations at home before admission to the hospital. The other death was the one to which reference was made above regarding the injury to the posterior cervical wall at the site of pressure necrosis. Another death in this series might be of interest. The cause of death was listed by Fink as heart failure; but before the patient died she was subjected first to an attempt at forceps delivery, then to a symphysiotomy which failed to permit delivery, and finally to a cesarean section. There were 11 fetal deaths but only three showed cranial or intracranial injuries at autopsy, and one of these three was the child of the patient who had been subjected to the multiplicity of obstetric operations. I might add that Riediger, in criticising Fink, said that when the latter first used the Kielland forceps, he applied them incorrectly and had to be shown how by an assistant. Riediger said that in a total of nearly 200 Kielland forceps deliveries performed by many operators at the Dortmund clinic, the results were excellent.

Very recently, Spitzer reported the results of five years' experience with the new forceps in 132 cases. In 59 the head had been high and it had been found movable above the pelvic inlet 40 times. In only 35 per cent had the cervix been completely dilated. Ninety per cent of the patients were primiparas and 65 per cent were over thirty years

of age. In five cases where craniotomy was necessary the Kielland forceps were applied and the head perforated. An easy extraction of the child followed in every case and made a cranioclast unnecessary. Spitzer makes the statement that in over 2,000 deliveries with the Kielland forceps no case of rupture of the uterus has occurred. He evidently had not heard of Zangemeister's case or Heidler's first report. Despite the lack of complete dilatation in most of Spitzer's cases and despite the fact that in these cases the cervix was not incised, very few cervical lacerations resulted. An episiotomy was performed in 90 cases and extension of tears resulted in 22; but it should be recalled that most of the patients were old primiparas and in almost half the head was not engaged. Two face presentations were very easily delivered. Two mothers died, one of sepsis for which indication the forceps delivery was performed, and the other of pelvic peritonitis which was also the indication for interference. The fetal mortality was 5.3 per cent but in reality only one fetal death was attributable to the forceps operation, despite the fact that 45 per cent of the deliveries were high forceps deliveries. Spitzer is convinced that such good results cannot be obtained with any other type of forceps.

At about the same time Hirschberg reported excellent results with the Kielland forceps in all types of head presentations and also in breech cases on the after-coming head. Babies which could not be delivered with the Naegele forceps were readily delivered with the Kielland forceps. Thirty-nine patients were delivered with the new forceps and in not one was there an extensive laceration. In two cases of prolapse of the cord, live children were delivered through definitely contracted pelves.

Winter, in a talk on forceps operations before the Northeast German Gynecological Society, pointed out the advantages of the Kielland forceps over the Naegele in cases of high transverse arrest, in unrotated face and brow presentations and especially on the after-coming head. In the discussion, Fink criticised the Kielland instrument while E. Schröder praised it.

The only mention of the Kielland forceps in the English language aside from abstracts of the foreign literature, is made in Williams' new edition of his Textbook of Obstetrics. Williams has never used the new instrument and expresses no opinion concerning it.

My own experience with the Kielland forceps is limited to twelve cases, of which five were high forceps deliveries. I did not use the Kielland method of applying the forceps but made the blades wander into place. Very good results were obtained in all cases but one, in which a vesicovaginal fistula resulted from a laceration of the anterior vaginal wall. However, in this patient two attempts to induce labor were made (bougie and bag) before results were obtained. At the time of delivery, after the patient had been in labor for two and a half days, her temperature was 102.6 degrees. The cervix was not completely dilated and had to be incised to permit delivery. The fistula healed spontaneously and both mother and child left the hospital in good condition. A second complication which I had was separation of the placenta by the posterior blade of the forceps. Profuse bleeding occurred. A live baby was delivered after

removal of the Kielland instrument, manual rotation of the head and the use of the Simpson forceps.

I feel that the Kielland forceps are distinctly helpful when the head is above the spines of the ischia, and also when the head is engaged, but where the occiput is not in an anterior position and cannot be brought into an anterior position manually. Where the head is engaged and the occiput is or can be rotated anteriorly, I believe better results can be obtained with the Simpson forceps. A disadvantage of the new forceps which I should like to point out is, that in making traction, the shafts of the blades press downward against the perineum, in consequence of which it is difficult to avoid contact with the anus.

SUMMARY

There have been 36 statistical reports concerning the use of the Kielland forceps in 1762 deliveries. In addition, 27 other individuals have expressed opinions about the new forceps and nearly all feel that the new instrument is a definite advance for delivering babies when the head is high and when the occiput is not in the anterior half of the pelvis. Most authors agree that the insertion of the anterior blade in the uterus is easily accomplished and without danger, and that maternal lacerations are less frequent than with the old types of forceps. The new forceps do not slip because there is an equal distribution of pressure all over the skull and the results for the children are very good. Rotation is easily accomplished and without damage. A biparietal application is always possible, the normal mechanism of labor can readily be imitated and less force is necessary for delivery. About half of the authors feel that the use of the forceps should be restricted to specialists in obstetrics. Of 61 individuals who have written or spoken about the Kielland forceps only six maintain that the new forceps are harmful or unnecessary. They are Schauta, Zimmermann, Sellheim, Opitz, Stratz and Fink. Schauta and Stratz never used the Kielland forceps and the others, except Fink, had very little experience with them. Fehling also opposed the new forceps but he spoke of a three bladed instrument.

Very recently Hiess in an article on high forceps operations expressed the opinion that the Kielland instrument was better than other forceps where high forceps were required. In the same issue Gäussbauer reported two cases in which the umbilical cord was torn by the anterior blade of the Kielland forceps. In one case there was profuse bleeding but the child was born alive. In the other case there was no bleeding but the baby was born dead. Gäussbauer does not believe these two cases should bring discredit to the Kielland forceps, because in his series of 80 cases, he had very good results. He does, however, caution against rotating the anterior blade in the uterus.

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Selected Abstracts

Anesthesia in Obstetrics and Gynecology

Schwartz, Otto H., and Krebs, O. S.: Scopolamine-Morphine Seminarcosis.
Journal American Medical Association, 1923, lxxxi, 1083.

The authors tabulate the results obtained by a definite method of procedure in the use of scopolamine-morphine during the first stage of labor. They feel that scopolamine-morphine is the most effective method of relieving pain. In the first series of 1,000 cases they received satisfactory results in 80 per cent of the cases and in the second series of 1,000 cases in 88.33 per cent. They show practically the same fetal mortality where the method was not employed. Its use is advised only in hospital practice under the supervision of a trained obstetrician and is condemned for the poorly equipped home under the general practitioner's care. It is of special service in primiparae. Asphyxia in the newborn was not found increased in this series.

WM. KERWIN.

Hirschman, N.: The "Standardized-Dosage" Method of Using Scopolamine-Morphine During Labor. *British Medical Journal*, October 14, 1922, p. 669.

The author reports observations on 140 cases, 63 primiparae and 77 multiparae. Morphine causes the analgesic effect primarily, and allows the scopolamine to take effect. The second dose is not required. He sometimes combines atropine, 1/150 grain, with the initial injection of morphine and scopolamine (morphine 1/4 grain, scopolamine 1/100 grain). This was followed by hourly doses of scopolamine 1/400 grain. Postpartum hemorrhage and manual extraction of the placenta do not occur more than usual.

F. L. ADAIR.

Greenwood, W. O.: Anesthetics and Analgesics in Labor. *British Medical Journal*, October 14, 1922, p. 667.

The author advocates the use of morphine and scopolamine to lessen the pain and shock incident to labor. He thinks the dose should be varied with the individual patient as well as the succeeding doses. About a half hour after the second dose, the patient should be tested for amnesia. If this procedure is carefully carried out it is without special danger to either mother or child.

F. L. ADAIR.

Kouwer: Painless Childbirth. *Nederlandsch Tijdschrift voor Verloskunde en Gyniekologie*, 1922, xxviii, 113.

Kouwer reviews rather exhaustively the history of attempts to lessen the pains of childbirth which, apparently, had its beginning even before the beginning of the Christian era. He pays especial attention to the evolution of morphine-scopolamine seminarcosis and analyzes carefully the reports of various observers in all parts of the world.

He thinks it rather unfortunate that this method has been spread more by advertising which often smacks of quackery, rather than by the assimilation of scientific reports, which latter are hardly in accord with the exorbitant claims

of the advertizements. He calls attention not only to the glowing report in McClure's in 1914, but also to the appearance in various British magazines of advertizements of so-called "Twilight Sleep Homes." Some of these issue booklets in which claims are made "which are altogether at variance with available scientific data." While women who are confined in these institutions "experience a most delightful slumber, either dreamless or accompanied by dreams of happiest import," nothing is said of the 25 per cent failures which even Gauss admits. Furthermore, the relatives are absolutely excluded in order to spare them the impression which these "delightfully slumbering" women would make upon them.

Kouwer deplores the impression implied by these advertizers and propagandists that childbirth has only one danger, namely pain, the absence of which causes a woman to retain her youth and slender figure, reduces the number of stillborn infants and, as is proved by photographs, produces healthy, vigorous children. That this is really so, is further demonstrated by scores of anonymous testimonials, and the hope is expressed that, eventually, the government will equip similar homes to make this "blessing" available even to the poor and thus increase the birth rate which is so badly needed in England. All dangers and complications are overshadowed by the one big, all-important topic, pain.

He regrets that even some Dutch physicians have been swept away by the advertizing propaganda of this "foreign fad" and ends by expressing the opinion that, when a woman has so far degenerated that she can no longer endure the pain incident to childbirth, she is no longer fit for motherhood.

R. E. WOBUS.

Strube: Is Morphia an Antidote in Scopolamin Poisoning? Zentralblatt für Gynäkologie, 1923, xlvii, 1460.

It was formerly thought that the toxic and lethal doses of scopolamin were far apart, but with increased use of the drug severe intoxications, including paralysis of the respiratory center, were noted also in normal individuals, even with therapeutic doses; and it was held that morphia acted as an antidote against this intoxication, though the one complemented the other in its capacity to produce insensitiveness. Cremer, who has tabulated the action of the two drugs, found that while scopolamin will increase the pulse frequency and raise blood pressure, morphia slows the pulse and lowers blood pressure. The former is a vasodilator, has a paralytic action on the motor nerves, quickens and deepens respiration, represses secretion, and promotes peristalsis; while the latter is a vasoconstrictor paralyzing sensory nerves and respiration, promoting perspiration, and lessening peristalsis. Cloetta believes, on the contrary, that the combination of scopolamin and morphia adds to the danger of each drug, and that the tolerance for scopolamin in cases of mania says nothing for its tolerance in mentally healthy subjects. Both scopolamin and morphia are narcotics. The strength of a narcotic varies according as it is dissolved by water or fat, the effect being the stronger the more fully the body is soluble in lipoids as compared to water.

The great danger of nonvolatile narcotics lies in their propensity to circulate in the blood longer than the volatile. They can be administered only up to the stage of hypnosis, as complete anesthesia would be followed by asphyxia. With scopolamin and morphia the danger is that the maximum dose for the individual may be inadvertently exceeded.

Four groups of narcotics may be distinguished: (1) Narcotics of the fat series (chloroform and veronal); (2) pure alkaloids (morphia); (3) Tropeine (scopolamin); (4) Cromine combinations. According to Bürgi drugs which work in the same manner may increase their power by combination, while those having different points to attack show in combination a multiplied effect. Strube believes that the multi-

plied effect of the combination of scopolamin and morphia is due to increased alkalinity of the blood in those persons who have severe symptoms of poisoning after even slight doses subcutaneously. Scopolamin is the "chameleon" among narcotic drugs, it is so extremely variable in its effect that it should be resorted to as infrequently as possible.

H. M. LITTLE.

Krönig, W., and Schönholz, L.: Medicinal and Hypnotic Twilight Sleep in Obstetrics. *Monatsschrift für Geburtshilfe und Gynäkologie*, 1923, lxii, 161.

The proper place for the use of twilight sleep is a hospital and particularly one with a good personnel. The low fetal mortality obtained with the use of twilight sleep is attributable not to the procedure *per se* but to the careful observation of the fetal heart tones. Twilight sleep is contraindicated in patients with primary atony and marked pelvic contraction. It should be stopped when secondary atony appears and when the patient does not press down during the second stage of labor.

The authors employed not only medicinal twilight sleep but also hypnosis. Among fourteen patients there were two failures. No bad results were noted in either mother or child. Because of the latter fact, the authors prefer hypnosis to morphia and scopolamine since after the latter one may see excitation instead of sleep, apnea of the child and prolongation of labors. On the other hand, after hypnosis some highly intelligent women may suffer from "psychic trauma." For hypnosis a long period of preparation during pregnancy is necessary. The authors believe that a combination of both medicinal and hypnotic twilight sleep would eliminate many disadvantages of either method.

J. P. GREENHILL.

Kogerer: Posthypnotic Birth Analgesia. *Wiener Klinische Wochenschrift*, 1922, xxxv, 513, 538 and 558.

A long and detailed article. The fundamental requirements for the use of this method are first, that the subject must have an imaginative faculty which will allow of her being easily hypnotized and second, that one must not lead the patient into an inner conflict that will remain in her consciousness, a result that may occur when one uses suggestion. The first condition is fulfilled if the patient is easily hypnotized. As regards the second it may be said that when a hypnotized person is given a suggestion which conflicts with her own natural feeling, she may react in three ways: first, the suggestion is ineffective; second, the subject is agitated, may come out of the hypnotic state, and it may be impossible to re-induce it; and third, the ideas conflict, the result of the conflict cannot be foreseen, and there is always a more or less strong spiritual shock, which is unfortunate for the patient and may lead to hysterical symptoms. It is therefore advisable that only a physician and, as a rule, only a psychiatrist should use this method because he would avoid conditions likely to cause failure or bad results.

The technic is as follows: A short explanation is given that hypnotism is a natural phenomenon which has nothing to do with the supernatural; that it is purely a sleep in which one dreams and loses connection with the material world for a short time; and that it is not possible to hypnotize a person if she does not desire it. Then the patient is hypnotized and told first that the hand feels no pain and then that the abdomen feels none. The necessary analgesia cannot be obtained at one sitting, so the treatment is started two weeks before labor is expected and three or four treatments are given. When labor starts she is hypnotized again.

He reports in great detail twenty-seven cases. Nineteen felt none or very few

labor pains. Ten of these felt no pain. Five felt pain when the head came over the perineum; in three of these the head was large; one had a small vagina; and one small pelvic measurements. The other four showed signs of feeling pain but in a much reduced amount. Of the eight poor results, five were hysterical or psychopathic persons. Kogerer feels that it is a valuable method, that it is not dangerous to mother or child, and that it is especially useful for women who fear the pain of labor.

FRANK A. PEMBERTON.

Danforth and Davis: Obstetrics Analgesia and Anesthesia. A Consideration of Nitrous Oxide-oxygen and Various Combined Methods. *Journal American Medical Association*, 1923, lxxxi, 1090.

They combine several pain-relieving drugs with nitrous oxide-oxygen and obtain most satisfactory results. Nitrous oxide-oxygen started at the end of the first stage is carried throughout the rest of the labor. Thus the majority of obstetric operations can be performed. The more difficult forcep extraction are done under ether. Versions and manual rotation of the head are outstanding exceptions to the use of gas, because the uterus does not stop its activity. This method has proved satisfactory. Maternal mortality in a series of 1,029 cases was 0.39 per cent; fetal mortality, excluding premature babies under 8 months, was 3.5 per cent. Including all premature babies it was 4.6 per cent. Patients convalesce more smoothly because of less exhaustion after nitrous oxide-oxygen. Nitrous oxide-oxygen may be used for examinations and short operations as well as for intermittent analgesia during the second stage of labor, but ether is the choice for long operations during pregnancy and labor.

WM. KERWIN.

Gillespie: Relief of Pain in Labor. *Ohio State Medical Journal*. 1921, xvii, 669.

Gillespie is an advocate of the use of chloroform in normal labor by the family doctor who must meet the emergency of obstetric practice with the contents of his satchel. He believes that chloroform must be given only at the beginning of the pain and to be truly successful must be applied to the mask before the patient is aware that the uterus is contracting, so that three or four full inhalations may be taken before the height of the pain approaches. Otherwise the patient will be busy sucking in the vapor when she should be holding her breath and bearing down for efficient progress. The amount of chloroform must vary with the force of the pain and the amount of voluntary effort of the mother; hence it must be regulated by the obstetrician himself and not by an anesthetist who judges the requirements by the action of the patient. If the patient does not co-operate properly take the anesthetic away until she does. Obstetric anesthesia is not like surgical anesthesia. Relief from pain in the first stage of labor is more important than anesthesia in the second stage. Hyoscine and morphine may be used in some cases. Chloral may be given by rectum in 45 grain doses or more.

FOSTER.

Martin, A. F.: The Maintenance of "Obstetric Anesthesia" by Infundibulin and Chloroform. *British Medical Journal*, October 14, 1922, p. 672.

The author advocates the use of chloroform for light anesthesia accompanied by small doses of infundibulin. He draws the following conclusions: (1) That the woman can be rendered amnesic by a light partial anesthesia with chloroform, and the uterus may be kept active by means of repeated small doses of infundibulin, (2) He administers 0.5 c.c. of infundibulin every half hour or so, and administers

the chloroform with the onset of and during the pains; (3) The dosage of the chloroform should be regulated, usually about 3 drachms to the hour is sufficient.

F. L. ADAIR.

Hellendall, H: Pantopon versus Laudanum-Scopolamine Ether Narcosis. *Monatsschrift für Geburtshilfe und Gynäkologie*, 1923, lxii, 63.

The author studied a series of 674 patients who were narcotized as follows: Sixty-two received simple inhalation narcosis, 131 inhalation narcosis preceded by morphia, pantopon or narcophine, 100 narcophine and atropine, 266 pantopon-scopolamine-ether, and 115 received laudanum-scopolamine-ether narcosis. There was not a single death though 527 patients had laparotomies.

The author believes that pantopon-scopolamine-ether narcosis is preferable to the mixture with laudanum because 50 per cent of the patients who received laudanum were not sufficiently drowsy one hour after the injection whereas this was true in only 13 per cent of the patients who had received pantopon. After pantopon there was an average saving of 20 grams of ether as compared with laudanum. There were more disturbances attributable to the narcosis after laudanum than after pantopon. However, there was less vomiting after laudanum.

Hellendall warns against the promiscuous use of scopolamine because it is a dangerous drug and very difficult to eliminate from the body. An oxygen tank should always be at hand. Patients who are very old or cachectic, patients with circulatory or respiratory disturbances and children should not receive twilight sleep—inhalation narcosis.

J. P. GREENHILL.

Zimmermann: Aims and Limitations of Local Anesthesia in Operative Gynecology. *Zeitschrift für Geburtshilfe und Gynäkologie*, 1923, lxxxv, 502.

In gynecology, vaginal and abdominal interferences present two very different problems. In the former, an ordinary surgical anesthesia without much relaxation is sufficient; in the latter, a deep anesthesia is necessary to overcome the rigidity of the abdominal musculature. After fairly extensive experimentation with a number of methods, the author comes to the following conclusions: As a method of choice, lumbar anesthesia is to be discarded; it is unreliable in its results and entirely unsuccessful in 3.5 per cent of cases. It is applicable to operations below the navel, and causes good relaxation of the abdominal muscles, but has unpleasant accompanying and after-effects and is very dangerous in seriously ill and cachectic patients. Four cases of 451 were lost as a direct result of lumbar anesthesia. Therefore, it is indicated only when, in an individual case for special reasons, it seems less dangerous than any other anesthetic. It should never be employed for minor operations.

Sacral anesthesia is dangerous and unreliable as it causes skin necrosis and decubitus as well as accompanying and after-effects of unpleasant nature.

Splanchnic anesthesia was employed only in one case and was unsuccessful because of puncture of a vessel. In spite of numerous recommendations from the surgical side, the author could not make up his mind to employ it further, especially as the true pelvis is not included in its region of applicability.

Paravertebral anesthesia, he considers too formidable an intervention. The large number of punctures (26 and more), the great quantities of anesthetic (up to 700 c.c. of one-half per cent novocaine) which are required, make this method too complicated and too dangerous to be valuable.

A submethod, the presacral anesthesia, is better founded. It requires only two injections and minimal quantities of novocaine and gives good results without

after-effects of unpleasant nature. Its applicability is limited to the true pelvis and further injections are required to eliminate the skin nerves of the perineum. This method has been largely given up, because for vaginal operations local infiltration anesthesia gives such ideal results, yet its applicability is limited to such operations.

For laparotomies, particularly for gynecologic laparotomies, general anesthesia is still the method of choice and attended by less failures and disastrous results than any other method. Unavoidable anesthetic deaths are very rare, anesthetic accidents are rare, and could be made more so by careful attention to the technic of administration and proper training of young physicians in the art of anesthesia.

MARGARET SCHULZE.

Bonar and Meeker: The Value of Sacral Nerve Block Anesthesia in Obstetrics.

Journal American Medical Association, 1923, lxxxi, 1079.

A procaine solution was used to block the sacral nerves for the purpose of giving relief from pain during the last part of the first and the second stage of labor in a series of 90 cases. In part of the series a 0.4 per cent sodium bicarbonate was employed to ascertain whether the anesthesia could be prolonged. Epidural injections with transsacral nerve block of the lower four sacral nerves was used in 16 patients. The average duration of anesthesia was 2 hours and 20 minutes. In 20 cases where sodium bicarbonate was used the duration was 2 hours and 2 minutes. Epidural injections with procaine and bicarbonate solutions produced an average anesthesia of 1 hour and 57 minutes. Where 2 per cent procaine was used the average duration was 1 hour and 55 minutes by the epidural method. From the standpoint of the anesthetic better results were obtained by the transsacral method. The addition of sodium bicarbonate was of no advantage. The difficulty of the transsacral block made the epidural method more practical, though the height of anesthesia is invariable. Twenty-one forceps operations were done in these 90 cases. The anesthetic destroyed all desire for bearing down during contractions and this has to be counteracted by other medication. The pains of labor may be entirely controlled by blocking the second, third, fourth and fifth sacral and anococcygeal nerves. Relaxation of pelvic floor is accomplished. Operations such as forceps and repair of perineum are done painlessly. The author points out the advisability of devising a method to prolong the anesthetic action of an epidural injection for at least six or seven hours.

WM. KERWIN.

Cotte, G: Regional Anesthesia of the Uterus. La Presse Médicale, 1923, iv, p. 36.

Latarjet and Rochet have recently shown that the uterine nerve supply is divided into two groups, which join one another in the neighborhood of the isthmus. The larger and most important of these nerves arise from the hypogastric ganglion and fuse with the anterior and superior portions of the uterosacral ligaments then penetrate the uterus at the posterior and external part of the isthmus. The second group, formed by several filaments from the vaginovesical nerves, reach the organ at the inferior and anterior aspect of the isthmus. There is still another filament, the lateral nerve of the uterus, which is a little distance away from the isthmus and is distributed upon the lateral border of the organ. These investigators pointed out the feasibility of producing regional anesthesia of the uterus by blocking the bases of the broad ligaments with an anesthetic solution.

The author has adopted this suggestion in 14 cases, as follows: dilatation and curettage, 11 times; enucleation of a cervical myoma (size of a mandarin), once;

"Le Fort operation," once; pelvic neuralgia (combined with a retrorectal injection of 500 gr. of artificial serum), once. He employs the following technic: Pulling down the cervix, he injects about 10 c.c. of a 1 per cent solution of novocaine (without adrenalin) on each side of the uterine isthmus, about 0.5 cm. from its lateral border and at a depth of 1 cm.; a few c.c. are also injected into the anterior culdesac, between the bladder and the uterus, and into the posterior culdesac, in the bases of the uterosacral ligaments. The latter procedure is often very difficult. In one case he injected the solution without mishap directly into the culdesac of Douglas. Anesthesia of this area might at times be produced purposely in this manner.

The author's results have been very satisfactory, so much so that he has practically abandoned general anesthesia for curettage. He states, however, that the curettements have all been performed for the removal of placental debris, with softened cervixes; he has had no experience in dilating thick, fibrous cervixes under regional anesthesia. Careful attention to the details of the technic, and a wait of a sufficiently long interval after the injection before beginning the operation, are essential points. The author feels that for more extended vaginal work, such as hysterectomy or perineorrhaphy, low rachidian anesthesia will be preferable.

E. L. KING.

Smith, G. F. R.: Some Observations on Postanesthetic Complications. British Medical Journal, 1922, No. 3196, p. 513.

The author reports observations on 571 cases of general anesthesia. There were four deaths. One was from operative shock, one from bronchopneumonia, one from acidosis and one probably from acid intoxication. In this series were 221 major abdominal gynecologic operations, given warm ether with a small addition of chloroform. There were 220 minor vaginal operations; these were given open ether. In both series there were chest complications in 22 cases, i. e., 4.5 per cent; of these 5 were serious. The morbidity in the major operations was 7.5 per cent and in the minor 2.2 per cent. He thinks the use of the warm ether vapor accounts for the low percentage of serious pulmonary complications. Flatulency occurred in 5.4 per cent. He secured a lower percentage, (that is, 4.5 per cent) in cases prepared as follows: One ounce castor oil 36 hours prior to operation, morphine grains 1/6 and atropine grains 1/100 one hour before operation, ordinary food the preceding day, breakfast of tea and toast, one ounce of syrup of glucose one hour before operation. Vomiting occurred in 27.6 per cent of the major, and 12.7 per cent of the minor, i. e., 20.1 per cent for all cases. The change in technic as noted above increased the vomiting from 17.2 to 25.1 per cent but severe vomiting showed a decrease from 6 to 3.4 per cent.

F. L. ADAIR.

Books Received

COMBINED TEXTBOOK OF OBSTETRICS AND GYNECOLOGY. By J. M. Munro Kerr, Professor of Obstetrics and Gynecology, Glasgow University, etc., James Haig Ferguson, Gynecologist Royal Infirmary, Edinburgh, etc., James Young, Assistant Physician, Royal Maternity Hospital, Edinburgh, etc., and James Hendry, Senior Assistant to the Muirhead Professor, University of Glasgow, etc. New York, 1923. William Wood & Company.

GYNECOLOGY. By William P. Graves, Professor of Gynecology at Harvard Medical School, Surgeon-in-Chief to the Free Hospital for Women, Brookline, etc. With 388 half-tone and pen drawings by the author, and 146 microscopic drawings, with 103 of the illustrations in color. Third Edition, thoroughly revised. Philadelphia, 1923. W. B. Saunders Co.

AMERICAN ILLUSTRATED MEDICAL DICTIONARY. A new and complete dictionary of the terms used in medicine, surgery, etc. Pronunciation, derivation and definition. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., etc. Twelfth edition, revised and enlarged. Philadelphia, 1923, W. B. Saunders Co.

SEWAGE TREATMENT IN THE UNITED STATES. Report on a Study of Fifteen Representative Sewage Treatment Plants. By H. H. Wagenhals, E. J. Theriault and H. B. Hommon. Prepared by direction of the Surgeon General. Washington, 1923, Government Printing Office.

ANNUAL REPORT OF SURGEON GENERAL of the Public Health Service of the United States. For the Year 1923. Washington, 1923, Government Printing Office.

TENSION ARTERIALMENTE VISCOSIDAD SANGUINEA EN OBSTETRICIA. Par Dr. Francisco A. Deluca, Prosector de la Clinica Obstetrica y Ginecologia. Buenos Aires, Imprenta Mercatali, 1923.

HANDBUCH DER KINDERHEILKUNDE. Herausgegeben von Professor Dr. M. von Pfaundler und Professor Dr. A. Schlossmann. Vier Bände mit 70 meist farbigen Tafeln und ca. 500 Textfiguren. II. Band, Dritte Auflage mit 29 Tafeln und 260 Textfiguren. Leipzig, 1923, Verlag von F. C. W. Vogel.

BIOLOGIE UND PATHOLOGIE DES WEIBES. Ein Handbuch der Frauenheilkunde und Geburtshilfe. Herausgegeben von Josef Halban, Wien, und Ludwig Seitz, Frankfurt a. M. Lieferung 2. Berlin N 24, 1923, Urban und Schwarzenberg.

HERZ UND SCHWANGERSCHAFT. Von Professor Dr. Walter Frey, Oberarzt der medizinischen Klinik in Kiel. Mit einem Geleitwort von Geh. Med. Rat Dr. W. Stoeckel in Leipzig und Professor Dr. A. Schittenhelm in Kiel. Leipzig, 1923, Verlag von Georg Thieme.

HEALTHY MOTHERS. By S. Josephine Baker, M.D., Director, Bureau of Child Hygiene, New York City, etc. Boston, 1923, Little, Brown, and Co.

HEALTHY BABIES. By S. Josephine Baker, M.D., Director, Bureau of Child Hygiene, New York City, etc. Boston, 1923, Little, Brown, and Co.

HEALTHY CHILDREN. By S. Josephine Baker, M.D., Director, Bureau of Child Hygiene, New York City, etc. Boston, 1923, Little, Brown, and Company.

HEREDITY AND EUGENICS. By R. Ruggles Gates, Ph.D., F.L.S., Professor of Botany in the University of London and Head of the Department of Botany at King's College, etc. New York, 1923, The Macmillan Co.

PRURITUS OF THE PERINEUM. (Pruritus Ani, Vulvae and Scroti). By Joseph Franklin Montague, of the Rectal Clinic, University and Bellevue Hospital Medical College, etc. With 37 Illustrations. New York, 1924, Paul B. Hoeber, Inc.

THE TOXAEMIA OF INTESTINAL OBSTRUCTION. By R. H. Paramore, F.R.C.S., Hon. Surgeon and Gynaecologist, Hospital of St. Cross, Rugby, etc. London, 1923, H. K. Lewis and Co.

Errata

In the February, 1924, issue, page 188, last paragraph, sixth line from the bottom, in the article by Dr. J. C. Applegate, the dose of morphine should read gr. 1/12 and scopolamine gr. 1/400.

CHAS.
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